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TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF CALIFORNIA;

DURING THE YEARS 1870 AND 1871.

SACRAMENTO:
RUSSELL & WINTERBURN, BOOK AND JOB PRINTERS.
1872.

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The Committee on Publication, in issuing the present volume, respectfully report, that they have deemed it advisable to publish, in connected form, all the proceedings relating to the revival of the State Medical Society, during the first year of its re-organization. By so doing, the names, and most important personal facts, appertaining to each member, are placed collectively on record, in the order in which they were brought before the Society, and thus properly become matters of medical history in our State. Identified as the great uprising of the profession in California, in 1870, is with the recent session of the American Medical Association, in San Francisco, we trust, that the course we have adopted, will, while commemorative of this auspicious event, prove therefore more acceptable to the members of the society.

THOS. M. LOGAN, M. D., Chairman,
W. R. CLUNESS, M. D.,
W. T. GROVER, M. D.,
CLINTON CUSHING, M. D.,
W. T. WYTHE, M. D.,
Committee on Publication.

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CONTENTS.

PAGE.

Minutes of the meeting held in San Francisco, October 19th and 20th, 1870, and Re-organization of the Society 1–17

Minutes of an Adjourned Meeting held in San Francisco on the 1st of May, 1871 18–24

Minutes of the First Annual Meeting, after the re-organization, held in the Senate chamber of the Capitol, at Sacramento, on the 11th and 12th of October, 1871 25–33

Roll of Delegates to the American Medical Association, from beyond the Rocky Mountains, who were elected Honorary Members 34–38

Annual Address: by Thos. M. Logan, M. D., of Sacramento, President of the Society 39–63

Report of the Committee on Surgery: by G. L. Simmons, M. D., of Sacramento, Chairman 64–97

Coxalgia, or Hip Joint Disease and its Treatment: by L. C. Lane, M. D., of San Francisco 98–105

Skin Grafting: by W. Fitch Cheney, M. D., of Chico 106–108

The Genesis of Crime: by Ezra S. Carr, M. D., Professor of Chemistry and Agriculture in the University of California 109–117

Medical Topography of San Diego: by D. B. Hoffman, M. D. of San Diego... 118–132

Medical Topography of Santa Barbara: by M. H. Biggs, M. D., of Santa Barbara 133–137

Ovariotomy: by J. H. Wythe, M. D., late Surgeon U. S. Volunteers 138–142

Typhoid Fever; its Treatment by Mineral Acids: by R. H. Plummer, M. D., of Dixon, Solano County 143–148

On Quarantine: by W. T. Wythe, M. D., of Sacramento 149–160

Medical Topography of Petaluma: by G. W. Graves, M. D., of Petaluma..... 161–164

Remarks explanatory of a Splint for the Treatment of Fracture of the Inferior Maxillary Bone: by R. W. Murphy, M. D., of Sacramento 165–166

Why do we Wear Spectacles?: by Ed. M. Curtis, M. D., of Sacramento. [On page 170, Figure 3 should be inverted.] 167–179

Opthalmic and Aural Surgery: by W. F. Smith, M. D., of San Francisco..... 180–191

Report of the Committee on Resolutions respecting the Dispensing of Medicine and the Recognition of Pharmacy, etc.: by Caleb Cushing, M. D., of Oakland, Chairman 192–193

Hygiene, as Regards the Sewerage of San Francisco: by Arthur B. Stout, M. D., of San Francisco 194–226

Report of the Committee on Practical Medicine: by Henry Gibbons, Sr., M. D., of San Francisco 227–248

Monthly and Annual Mortality of California, and the Corresponding Mean Temperature and Humidity at Sacramento: by Thomas M. Logan, M. D., of Sacramento, Permanent Secretary State Board of Health 249–251

Standing Committees 252–253

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TRANSACTIONS OF

The State Medical Society of California

DURING THE YEARS 1870-71.

REORGANIZATION OF THE SOCIETY.

In pursuance of a call issued by the State Board of Health, for a Convention to reorganize the State Medical Society, a number of physicians met in the hall of the Young Men's Christian Association, in San Francisco, October 19, 1870.

The meeting was called to order at 10½ o'clock A. M., by Dr. T. M. Logan, of Sacramento, on whose motion Dr. James L. Ord, of Santa Barbara, was chosen Chairman. Dr. George Hewston, of San Francisco, was appointed Secretary.

At the request of Dr. H. Gibbons, Sr., Dr. T. M. Logan, through whom, as Secretary and executive officer of the State Board of Health, the meeting had been called, delivered an address of welcome, and explained the objects in view, as follows:

GENTLEMEN: In consequence of the part I have taken, as the executive of the only organization representing, in any degree, the profession of the State, in calling you together, it becomes my privilege, as well as my duty, to thank you sincerely for this your cordial response. Fourteen years ago, in association with the lamented Cooper, who was the leading spirit of the occasion, I officially signed

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the call, as Corresponding Secretary of the Medical Society of Sacramento, for a Convention in that city, to inaugurate the scheme which we are now assembled to resuscitate. The objects for which the State Medical Society was formed did then, as they do now, enlist my warmest interest and command my active co-operation; and, judging from the intelligent—many of them old familiar—faces around me, I have reason to believe that I entertain these views and professions only in common with you all.

Prior to this organization, as most of you well remember, the medical mind was in a state of inertia—the profession in a chaotic condition. The dominant materialism of the Golden Age, which had invaded every department of human activity, and inverted the natural order of things by subjecting the higher to the lower, was degrading medicine into a mere business, leading men of real ability, who might have been remembered as benefactors of their race, to spend their noble energies in building up an extensive practice, irrespective of the means, by which alone the much-coveted prize could be secured. But no sooner were the clarion notes of our call sounded, than a new spirit was awakened, and from their sheltering privacy, in all parts of the State, volunteers poured in, and threw their souls into the movement which was to purify and regenerate the prostrated glory of their calling. I need not remind you how the dim line of demarcation—so dim as scarcely to have been seen before by the professional eye—was then drawn so decidedly between false and sterling merit, that even the materialists, who relied upon the influence of cliques to be sustained, were obliged to chime in for a time with the overwhelming movement.

Nor need I recall the varied subsequent experience, which has but confirmed that of all other reformatory proceedings, that it is only by the slow workings of time that radical and lasting changes can be effected. As the formative crystal and the germinal cell which your microscopes reveal, are but the hidden sources of the mightiest elemental forces or of the most intricate developments of organic life, so the primordial movement which we are now assembled to further and consolidate, was but the beginning of the inborn power which is still animating the great body of the profession, and carrying it onward in its legitimate course. Had the State Society done nothing else than concentrate in its perfect and unexceptionable constitution and code of ethics this great uprising of the profession, and conserve its subsequent transactions through publications, it

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would have performed a service entitling it to an imperishable name in the medical annals of our country. But it has done more than this; and we proudly point, among its results, to our medical colleges, our monthly periodicals, our numerous local societies, our municipal boards of health, and last, but most exultingly, to our recognition in the legislative councils, by the engrafting of "State Medicine" on our statute book. These are only some of the results, patent and manifest to even the most skeptical, proving how our profession has been moving onward and upward since the great impetus given to it in 1856.

There remains still another evidence of our progress, to which I would especially at this time call your attention, and which is to be found in the fact, that our efforts and labors are confessedly appreciated by our compeers who are best capable of judging. So complete is this recognition, that with one consent the whole profession, throughout the length and breadth of this glorious republic, as embodied in the "American Medical Association," are coming to kneel side by side with us at a common altar, and pour the acquisitions of their devoted lives into a common treasury. At the sacrifice of their time and business—foregoing all the comforts and endearments of home, and subjecting themselves, on their way hither, to the hazards incident to the velocity of locomotion at the present day—they are coming from every portion of this great continent—coming, with their wives and their daughters, alike from the frigid frontiers of the northern lakes and from the orange groves of the sunny south, from the Atlantic to the Rocky Mountains and from the Rocky Mountains to the Pacific—not for the purpose of self-aggrandizement or personal ambition, nor yet to advance the schemes of parties, or to stir up sectional antipathies, but solely as a band of of brothers, to stimulate our industry and keep alive our professional ardor, while participating in these social amenities which constitute the true link between science and philanthropy. I would therefore invoke you, by all the stirring claims of duty, of hospitality, and of professional pride by which as a society we have been bound and are now about being rebound together, so to conduct our proceedings with unanimity and concert of action, that they may subserve the noble ends for which we are now assembled—that still more brilliant memories may adorn our annals and render us more worthy of the high compliment which, in its wisdom, our National Association has determined to accord us.

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As conducive on my part in some measure to such ends and aims, permit me to take occasion to state that I have caused a suitable number of schedules to be printed, containing blank spaces, in columns, to be filled up with the diseases or accidents we may be called upon to treat, together with other particulars, as specified in the headings. These I propose furnishing to such members as may offer to accept of them, on the condition of their being returned to me, properly made out, at least once a month. As soon as a sufficiency of *materiel* is thus accumulated, it will be digested and incorporated in my official reports to the Legislature—due credit being given to each contributor. All this can be done without much labor to any one individual or any expense to the society, and would tend to greatly elucidate questions of medical topography, etiology and pathology, as well as prove an important contribution to vital statistics and medical hygiene.

It was for such purposes this society was formed: to bring the members into harmonious unity of action; to cause mind to bear on mind; to work out the problem of climatic influences on the physical condition of man; to investigate the nature and causes of endemics and epidemics; to determine the best methods of holding life and health in integrity, and to remedy the evils incident to existence—these I conceive to be its prominent aims.

Scattered as many of the most worthy members are, over the whole area of our extensive State, the experience and observations of the individual are too often buried under the sod that covers his grave. Shall such losses be permitted to accrue for the want of a little fostering care? Or will this society resolve, in the strength of association, to do all in its power to facilitate the cultivation of the present for the fruit of the future? I trust it will adopt the latter course, and prove an exemplar of similar organizations in our sister Pacific States—leading to a noble emulation, whereby rival societies may hear of each other's triumphs over death and the grave, with as much enthusiasm as the great world now reads of victories in the battle-field.

Dr. A. B. Stout, of San Francisco, moved that this Convention organize itself into a State Medical Society. Carried.

Dr. S. R. Harris, of San Francisco, moved that a committee of five be appointed to select permanent officers for the society.

Dr. H. Gibbons stated that prior to the motion being put,

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it would be well to ascertain who were members and who were not. He moved that the Secretary be instructed to make a roll of all physicians who were legally qualified to form such society.

Dr. D. B. Hoffman, of San Diego, moved as an amendment to Dr. Harris' motion, that a committee of three on credentials be appointed by the Chair, to make out a roll of members, and report at 12 o'clock. Carried.

The Chair appointed as the committee, Dr. R. Beverly Cole, of San Francisco, Dr. T. M. Logan, of Sacramento, and Dr. D. B. Hoffman, of San Diego, and declared a recess until 12 o'clock.

At 12 M., the Convention having been called to order, the Committee on Credentials reported the following names of physicians, with residence, school and date of graduation:

Name.	*Residence.*	*School.*	*Date.*
Phelps Chamberlin	San Francisco	St. Louis University, Mo.	1858
H. S. Baldwin	San Francisco	Philadelphia College of Medicine	1849
Geo. Hewston	San Francisco	Philadelphia College of Medicine and University of Pennsylvania	1850 ——
Geo. E. Sherman	Oakland	University of New York	1867
Henry Gibbons	San Francisco	University of Pennsylvania	1829
J. J. Franklin	Sonora	Transylvania University, Ky	1828
E. J. Martin	Castroville	Cincinnati College of Medicine	1843
John Scott	San Francisco	F. R. C. S., Ireland and M. D. of St. Andrew's, Scotland	1844 1843
W. J. Paugh	San Francisco	Rush Medical College, Ill	1850
R. Beverly Cole	San Francisco	Jefferson Medical College, Phila	1849
J. D. Whitney	San Francisco	University of Pacific	1863
Clinton Cushing	Oakland	Rush Medical College	1865
T. H. Pinkerton	Oakland	Harvard University, Mass	1859
A. B. Caldwell	Santa Clara	Transylvania University, Ky	1841
Chas. Blach	San Francisco	University of Heidelberg, Germany	1854
A. G. Soule	San Francisco	Berkshire Medical College, Mass	1846
W. L. Twichell	San Francisco	Maine Medical School	1850
A. T. Hudson	Stockton	Albany Medical College, N. Y	1847
G. A. Shurtleff	Stockton	Vermont Medical College	1846
W. T. Bradbury	San Francisco	Rush Medical College	1864
Jas. Simpson	Grass Valley	University of New York	1855
Wm. Wallace Ross	Watsonville	University of New York	1858
Henry Gibbons, Jr.	San Francisco	University of Pacific	1863
Wm. P. Gibbons	Alameda	University of New York	1846
Luke Robinson	Santa Clara	Toland Medical College	1867
S. R. Harris	San Francisco	Col. Physicians and Surgeons, N. Y	1827

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Names.	*Residence.*	*School.*	*Date.*
J. W. Harville	San Francisco	University of Pennsylvania	1849
A. B. Nixon	Sacramento	Ohio Medical College	1846
Jos. Haine	San Francisco	University of Louvain, Belgium	1833
J. L. Ord	Santa Barbara	Jefferson Medical College	1846
N. J. Bird	San Francisco	Queen's College, Kingston, Canada	1860
R. T. Hayes	Los Angeles	Castleton Medical College, Vt.	1847
		and Col. Physicians and Surg., N.Y.	1869
W. A. Grover	San Francisco	Berkshire Medical College, Mass.	1843
J. B. Pigne-Dupuytren	San Francisco	Edinburgh R. C. S., Scotland	1848
A. B. Stout	San Francisco	College of Physicians and Surgeons	1839
A. S. Ferris	San Francisco	Geneva Medical College	1840
Chas. Palmer Chesley	San Francisco	Vermont Medical College	1870
E. H. Neill	San Francisco	King's College, London	1858
Valentine Newmark	San Francisco	Toland Medical College	1868
D. B. Hoffman	San Diego	Toland Medical College	1865
T. M. Todd	San Francisco	Miami Medical College, Ohio	1869
Benj. D. Dean	San Francisco	Berkshire Medical College, Mass.	1843
W. Ferris Brown	Stockton	Richmond Medical College	1843
Thos. M. Logan	Sacramento	Medical College of South Carolina	1828
C. N. Ellinwood	San Francisco	Rush Medical College	1858
Jas. M. Sharkey	San Francisco	Harvard University	1849

Certificates of the appointment as delegates of the following physicians were presented:

Alameda County Medical Society—T. H. Pinkerton, Clinton Cushing, E. Trenor and G. E. Sherman.

Santa Clara Medical Society—A. B. Caldwell and L. Robinson.

San Diego County Medical Society—D. B. Hoffman.

Monterey and Santa Barbara Counties—Jas. L. Ord.

The San Francisco Medical Society, the German Medical Society of San Francisco and the Sacramento Medical Society, were also represented.

On motion of Dr. T. M. Logan, that a committee of three be appointed to draft a constitution for the State Medical Society (amended by Dr. R. T. Hayes, of Los Angeles, by inserting "and plan of organization"), the Chair appointed Drs. Logan of Sacramento, Gibbons of San Francisco and Shurtleff of Stockton. After a short conference the Chairman of the Committee, Dr. Logan, read the Constitution and order of business of the old State Medical Society, whose adoption

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was recommended, save in one particular—that the time of meeting be changed to the second Wednesday of October.

On motion of Dr. R. Beverly Cole, of San Francisco, the Constitution and order of business, as amended, were unanimously adopted.

Dr. Hayes moved that a committee of five be appointed to nominate permanent officers for the society, and report at 2 o'clock.

Dr. Cole moved to amend so that the committee should report in ten minutes.

Dr. B. D. Dean, of San Francisco, arose to a point of order. It was desirable that it should be decided who were and who were not members of the society, as a difference of view was entertained by several of those present.

After some discussion the Chair stated that all whose names had been reported by the Committee on Credentials were permanent members of the State Medical Society.

Dr. H. Gibbons proposed an amendment to Dr. Hayes' motion, that the Committee on Nominations consist of one member from each county represented, and that they report at 7½ o'clock this evening.

Several other propositions were offered, but the amendment was finally adopted.

On motion of Dr. Logan, it was decided that when the society adjourns it be to 7½ o'clock in the evening.

Dr. Cole, of the Committee on Credentials, reported the following gentlemen for membership, and they were elected unanimously:

Name.	*Residence.*	*School.*	*Date.*
A. B. Mehring	Woodland	University of Maryland	1864
H. P. Tuttle	Salinas City	Toland Medical College	1869

The Chair announced the following Committee on Nominations: D. B. Hoffman, San Diego; R. T. Hayes, Los Angeles; Jas. L. Ord, Santa Barbara; E. J. Martin, Monterey; W. W. Ross, Santa Cruz; A. B. Caldwell, Santa Clara; A. B. Stout, San Prancisco; C. Cushing, Alameda; Jas. Simpson, Nevada;

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J. J. Franklin, Tuolumne; A. B. Mehring, Yolo; T. M. Logan, Sacramento; and W. F. Brown, San Joaquin.

A member from the interior having, in the course of remarks, referred to the profession in San Francisco as bearing the reputation of being divided into hostile cliques, Dr. H. Gibbons, Sr., requested the privilege of correcting the error. He said the great body of physicians of the city were in perfect harmony; that, as a matter of course, among so many there were a few natural growlers, who seemed to take great pleasure in giving a bad name to the body; but that the two medical associations in this city enjoyed the most perfect harmony —both in their own membership and in regard to each other. Differences of a personal or professional character were really very uncommon among the physicians of San Francisco.

Adjourned to 7½ P. M.

EVENING SESSION.

The Convention having been called to order by the Chairman, the minutes of the morning session were read, corrected and adopted.

The Committee on Nomination of Officers reported as follows:

President—T. M. Logan, of Sacramento.

Vice Presidents—S. R. Harris, of San Francisco; T. H. Pinkerton, of Oakland; J. L. Ord, of Santa Barbara; G. A. Shurtleff, of Stockton; and D. B. Hoffman, of San Diego.

Corresponding Secretary—Geo. Hewston, San Francisco.

Recording Secretaries—A. B. Nixon, of Sacramento, and Henry Gibbons, Jr., of San Francisco.

Treasurer—A. B. Stout, of San Francisco.

On motion of Dr. B. D. Dean, the report was received and the committee discharged.

Dr. J. W. Harville moved that the Secretary be authorized to cast the ballot of the association for each of those named for officers.

Prior to the putting of this motion, Dr. Cole moved that

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the rules be suspended for five minutes, to allow those not present at the morning session to give their names to the Committee on Credentials, and become members of the society.

The former motion having been withdrawn, Dr. Cole's motion prevailed.

The committee then reported the following names. The report was accepted and the gentlemen unanimously elected:

Name.	*Residence.*	*School.*	*Date.*
Chas. Rowell	San Francisco	University of Pacific	1861
J. F. Hamilton	San Francisco	Rush Medical College	1854
S. M. Tibbits	San Francisco	Berkshire College, Mass	1827
F. W. Hatch	Sacramento	University of New York	1843
G. L. Simmons	Sacramento	Harvard University	1856
C. B. Holbrook	San Francisco	Vermont Medical College	1839
W. Ayer	San Francisco	Harvard University	1847
S. D. Campbell	Suisun City	University of New York	1846
E. L. Parrimore	Knight's Land'g	University of Maryland	1867
G. W. Zimmerman		Ohio Medical College	1865
J. P. Whitney	San Francisco	Jefferson Medical College	1835
F. W. Todd	Stockton	Cincinnati Medical College	1838
John Hewston	San Francisco	Philadelphia College of Medicine	1854
Thos. Price	San Francisco	Toland Medical College	1868
P. H. Humphrey	San Francisco	University of New York	1860
E. S. Carr	Oakland	Castleton Medical College, Vt	1842
L. C. Lane	San Francisco	Jefferson Medical College	1851
Wm. Carman	San Francisco	Col. Physicians and Surgeons, N. Y.	1847
W. H. Johnson	San Francisco	University of Pennsylvania	1862
A. J. Younger	San Francisco	Toland Medical College	1869
W. F. Smith	San Francisco	Miami Medical College, Cincinnati	1867
B. F. Hardy	San Francisco	University of Pennsylvania	1840

It was now moved that the society proceed to the election of a President. Carried.

Drs. D. B. Hoffman and A. G. Soule were appointed tellers by the Chair, on motion of Dr. Dean; and the motion of Dr. Harville, that the Secretary be directed to cast the ballot of the society for each of those named for officers by the Committee on Nominations, was renewed, put to vote and carried.

The vote being taken for President, the Chairman declared Dr. T. M. Logan, of Sacramento, the unanimous choice of the society. He was thereupon conducted to the chair, when he made the following remarks:

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GENTLEMEN: I return you my sincere thanks for the kind consideration I have just received at your hands—a consideration which is doubtless due to the circumstance, stated by me this morning, of my connection with the primary organization of this society. It would have been, perhaps, more to your satisfaction had the selection of your presiding officer fallen upon an abler member; for so unaccustomed am I to parliamentary proceedings, I fear I may prove an impediment to, rather than a regulator of, your business. An obedience to your will, however, and a resolution against delinquency in whatever may become my duty in promoting the objects of the society, are motives too powerful to permit me to hesitate any longer. Relying, therefore, upon the same demonstrations of partiality which predominated in my election, I throw myself upon your indulgence, confidently asking for that leniency toward my shortcomings, which surely will not be denied to a functionary of your own choice, whose ambition is rendered virtuous by consisting in a wish to do his duty and to merit your approbation.

The other gentlemen named in the report on nominations were then balloted for and declared elected.

The committee having made no nominations for Censors, on motion the President was requested to nominate.

The following names were presented: F. W. Hatch, of Sacramento; G. L. Simmons, of Sacramento; A. B. Nixon, of Sacramento; J. L. Simpson, of Grass Valley; A. G. Soule, of San Francisco; R. T. Hayes, of Los Angeles; L. Robinson, of Santa Clara.

On motion, the Secretary was directed to cast the ballot for each of these gentlemen, which being done, the President declared them duly elected.

On motion of Dr. H. Gibbons, the thanks of the society were tendered to the temporary officers: Dr. J. L. Ord, Chairman, and Dr. Geo. Hewston, Secretary.

Dr. H. Gibbons moved that when the society adjourn, it be to 10 o'clock the following morning. An amendment, making the time 11 o'clock, was lost, and the original motion prevailed.

The society then adjourned.

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SECOND DAY.

Society called to order at 10 o'clock A. M.—President, Dr. Logan, in the chair. In the absence of one of the Recording Secretaries (Dr. Nixon), Dr. Geo. Hewston acted in his stead.

Fifty-two members answered to their names at roll call. The minutes of previous meeting were read and adopted.

Several gentlemen being proposed for membership, their names were referred to the Censors, and a recess of a few minutes was taken to allow time for a report.

After the recess, Dr. F. W. Hatch, Chairman of the Board of Censors, reported the following names:

Name.	*Residence.*	*School.*	*Date.*
W. A. Barstow	San Francisco	Chicago Medical College	1869
Herman P. Babcock	Oakland	University of Buffalo	1863
R. M. Lampson	Montezuma	Vermont Medical College	1848
J. F. Montgomery	Sacramento	Universities of Virginia and Penn	1833–4
W. R. Cluness	Sacramento	Queen's College, Kingston, Canada	1860
A. W. Saxe	Santa Clara	Castleton Medical College, Vt	1842
Wm. Sharpe	Jackson	Philadelphia College of Medicine	1857
A. S. DuBois	Auburn	Toland Medical College	1865

The report was accepted, and on motion of Dr. A. G. Soule the several named gentlemen were unanimously elected permanent members of the society.

The question being upon the next place of meeting of the society, Dr. Hoffman proposed San Diego, Dr. Harris, Sacramento, and Dr. L. Robinson, San José.

Dr. Hoffman having withdrawn his proposition favoring San Diego, and seconded Dr. Harris' motion, the society unanimously voted in favor of Sacramento; and it was announced by the President that Sacramento would be the place of the next annual meeting.

The President announced the Standing Committees, as follows:

On Practical Medicine, Medical Literature and Hygiene—Drs. H. Gibbons, C. N. Ellinwood, A. G. Soule, S. R. Harris and C. Cushing.

On Surgery—Drs. G. L. Simmons, L. C. Lane, W. F. Smith, W R. Cluness and J. M. Sharkey.

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On Obstetrics—Drs. H. S Baldwin, A. S. Ferris, W. T. Bradbury, P. Chamberlin and B. F. Hardy.

On Medical Topography, Meteorology, Endemics and Epidemics—Drs. W. H. Johnson, D. B. Hoffman, E. J. Martin, J. L. Ord and G. E. Sherman.

On Indigenous Botany and the Domestic Adulteration of Drugs—Drs. John Hewston, W. P. Gibbons, E. S. Carr, Henry Gibbons, Jr., and A. B. Caldwell.

On Medical Education—Drs. George Hewston, E. S. Carr, Wm. Carman, S. D. Campbell and F. W. Todd.

On Publication—Drs. T. M. Logan, George Hewston, A. B. Nixon, Henry Gibbons, Jr., and J. B. Pigne-Dupuytren.

Committee of Arrangements—Drs. A. B. Nixon, F. W. Hatch, G. L. Simmons, W. F. Brown and A. B. Mehring.

On Prize Essays—Drs. L. C. Lane, J. P. Whitney, T. H. Pinkerton, G. A. Shurtleff and A. B. Stout.

Dr. Hoffman, of San Diego, offered the following resolution, and moved that it be referred to a committee of five members, to be appointed by the Chair:

Resolved, That all persons, of either sex, who possess the qualifications prescribed by the Constitution may become members of this society.

On motion of Dr. Stout, the resolution was laid on the table.

The Secretary then read a printed memorial from the Alameda County Medical Association, in relation to the position held by surgeons in the U. S. Navy.

Dr. H. P. Babcock, late Assistant Surgeon, U. S. Navy, by motion of Dr. Sherman, was requested to address the meeting on the subject of the resolutions. Upon concluding his remarks, he called upon Dr. W. H. Johnson, formerly of the Navy, to indorse his statements.

Dr. Johnson briefly gave his views on the subject, and cordially indorsed the resolutions.

On motion of Dr. Cushing, the preamble and resolutions, as read, were unanimously adopted, as follows:

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WHEREAS, Of late, repeated and persistent insults have been offered our professional brethren in the U. S. Navy, by the authority of the Navy Department, degrading them in rank and position, lessening, by example, the respect due their profession, and contracting their sphere of usefulness; and,

WHEREAS, In every civilized community throughout the world, save in our navy, the profession of medicine is considered, at least, equal in dignity and respectability to any other profession; and,

WHEREAS, In our service the members of the medical staff are selected by competitive examination from among the graduates of our medical schools, while the line officers are selected to be educated at the country's expense, from among the uneducated boys of the community, by favoritism, by relationship, or, as has lately been proven, by purchase; and,

WHEREAS, Rank and command are distinct ideas, having no necessary connection—there being a recognized necessity for *one* commander in all military operations, to whom the other officers are subordinate for the time being; and,

WHEREAS, If physical courage and personal exposure are the only tests of merit, no corps can show, during the late war for example, a larger proportion of killed by the enemy, by fire, by water, or by the more deadly and insidious foe, disease, than the medical officers of the navy; therefore, be it

Resolved, That we consider the stigma to which they have been subjected as applying to the profession at large; and while it is unremoved we consider that no young medical man, having a proper regard to his self respect, can accept an appointment in the medical corps of the navy, and subject himself and his profession to the indignities which the self-constituted and newly-born "Aristocracy of the Line" impose.

Resolved, That we view with pain and sympathy the position of the senior officers of the medical corps, whose long service now renders it impossible for them to resign and commence life anew; and we call upon our Senators and Representatives in Congress to recognize their position as co-equal with the highest in the service, by giving them military rank, such as is justly enjoyed by the medical staff of the army, and by that in the service of each of the civilized nations of the world, together with such increased emoluments and promotions as will recognize their invaluable services to our coun-

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try, and recompense them for the insults and oppression to which they have most unjustifiably been subjected.

Resolved, That a copy of these resolutions be sent to each Senator and Representative from this State, and that our delegates to the National Association be instructed to bring this subject before that body for its action.

Dr. Sherman offered the following preamble and resolutions, the adoption of which was seconded by Dr. W. P. Gibbons:

WHEREAS, We believe the medical profession to be a liberal and scientific profession, and desire to free it from all just cause of reproach; therefore, be it

Resolved, That we consider it irregular and reprehensible for a doctor of medicine to dispense or prescribe "patent medicines" or secret nostrums.

Resolved, That we believe it to be a duty which every physician owes to the profession and to the interests of humanity to recognize pharmacy as a liberal and scientific profession.

Resolved, That we can best sustain the liberal and scientific character of pharmacy by giving our professional support only to those pharmaceutists whose qualifications are attested by long experience under the scrutiny of professional eyes, or by a diploma from some legally incorporated College of Pharmacy.

Dr. H. Gibbons read from the Code of Ethics, Sections 3 and 4, Article 1, "Of the duties of physicians to each other and to the profession at large," and thought they fully covered the ground of the resolutions.

Dr. Cushing moved that the resolutions be referred to Dr. Sherman, for report at our next annual meeting, to which Dr. Sherman objected.

Dr. Soule moved the reference of the resolutions to a committee of three, to be appointed by the Chair; and the motion being carried, the Chair appointed Drs. Cushing, Soule and Tibbits.

Dr. H. Gibbons moved that the society now proceed to the election of delegates to the American Medical Association. The motion was amended so as to make it the duty of the President to appoint the delegates. Whereupon a discussion

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arose as to the propriety of appointing at the present meeting; and it was finally decided that as the society was entitled to but eight delegates at present, but would no doubt have a larger membership before the meeting of the National Association, the announcement of the names of the delegates should be deferred.

The Censors reported the following gentlemen for membership, and they were unanimously elected:

Name.	*Residence.*	*School.*	*Date.*
I. E. Oatman	Sacramento	Rush Medical College	1845
John C. Van Wyck	Oakland	University of Maryland	1848

Dr. Hoffman asked for action upon his resolution in regard to the admission of persons of either sex, in the view that it had been temporarily laid on the table.

The Secretary, however, stated that it had been indefinitely tabled.

Dr. H. Gibbons, by permission, gave a brief and forcible address on the annoyances and pecuniary and professional sacrifices the members of the medical profession are frequently obliged to endure in being called into Courts of justice as experts and witnesses, and to make post mortem examinations, without just recompense for the same. He moved that a committee of three be appointed by the Chair to examine into the subject, and report at the next annual meeting. Carried.

Dr. Gibbons having declined appointment on the committee, the President named Drs. T. H. Pinkerton, G. A. Shurtleff and R. T. Hays.

The President, desiring to retire, called Vice President Hoffman to the Chair.

Dr. Hays offered the following:

Resolved, That a committee of three be appointed by the Chair, to secure the passage of an amendment to the laws organizing the State Board of Health, to enforce the registration of deaths, births, etc., to enable the Board of Health to secure more complete statistics in relation thereto.

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After a spirited discussion, the resolution was lost.

Some discussion now occurred relative to the time of the adjourned meeting of the society.

On motion of Dr. Soule it was finally decided that it should take place in San Francisco, on the day next preceding the meeting of the American Medical Association, at 10 o'clock A. M. This will be the first Monday in May, 1871.

By permission, Dr. B. F. Hardy, of San Francisco, addressed the society upon the objects and condition of the San Francisco Lying-in Hospital and Foundling Asylum.

The Censors reported favorably upon—

Name.	*Residence.*	*School.*	*Date.*
G. A. Weed	Vallejo	Rush Medical College	1870

Who was unanimously elected a permanent member.

Dr. F. W. Todd, of Stockton, offered the following:

Resolved, That a committee be appointed by the Chair, to present to this society, at its next meeting, any amendment which may be advisable, in their judgment, to the present law regulating the registration of births and deaths.

The resolution was unanimously adopted, and the Chair appointed Drs. F. W. Todd, H. Gibbons and B. F. Hardy such committee.

Dr. Stout read extracts from a "Memorial to Congress on the cultivation of the cinchona tree in the United States, by the American Medical Association," and offered the following resolution:

Resolved, That a committee be appointed to address the Legislature of California and petition that honorable body to appropriate ——— acres of land, situated in ———, for the cultivation of the cinchona tree, in accordance with the memorial of the American Medical Association; and also for the creation of a Botanical Garden.

The resolution having passed, Drs. A. B. Stout and T. M. Logan were appointed the committee.

The Board of Censors proposed—

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Name.	*Residence.*	*School.*	*Date.*
M. B. Pond	Napa	Toland Medical College	1865

And he was unanimously elected a permanent member.

On motion, the Recording Secretaries were instructed to procure, at the expense of the society, the printing of the minutes of the Convention and State Medical Society, together with its Constitution, Order of Business and Code of Ethics, and the Corresponding Secretary was directed to forward one copy to each and every member of the Society.

There being no further business, the society adjourned.

GEO. HEWSTON,
A. B. NIXON,
HENRY GIBBONS, Jr.,
Secretaries.

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ADJOURNED MEETING.

An adjourned meeting was held in Pacific Hall, San Francisco, May 1st, 1871.

The large delegation present was called to order at 12 M. by Dr. Logan, of Sacramento, the President. Seated on the platform were several well known medical gentlemen from the Eastern States, viz: Dr. Stillé, President of the American Medical Association; Dr. F. G. Smith, of Philadelphia, and Dr. Davis, of Chicago. Also, Rev. Dr. Wythe, of California, and the four Vice Presidents of the State society; Dr. G. A. Shurtleff, of Stockton; Dr. S. R. Harris, of San Francisco; Dr. T. H. Pinkerton, of Oakland, and Dr. Hoffman, of San Diego.

Drs. A. B. Nixon and Henry Gibbons, Jr., acted as Secretaries.

After the roll had been called by Dr. George Hewston, Corresponding Secretary, Dr. Logan, in his capacity as presiding officer, delivered the following

OPENING ADDRESS.

GENTLEMEN: As you are well aware, we are on the eve of the most important event, from a medical point of view, that has ever transpired on the western confines of our glorious republic. Cut off, isolated, as we in California have been for twenty-two years, from fellowship and communion at the common altar of our science, we may well hail the approaching reunion as the crowning act of our lives, and rejoice in the glow of mental vigor, which, like a swift current of oxygen, its anticipation imparts. In the many new zealous faces around me I see the unmistakable, numerical proof that our society has nobly met the issue, and in the occasion that has brought

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us together I read the assurance that, in this age of railroads and telegraphs, our profession has not lagged behind in the race of the world's progress, but that we are following closely in the footsteps of those great leaders of American medicine, who have made our national association what it is to day—the vital centre, the nucleus, around which, by a beautiful synthesis, the subtle affinities of our State, county and other medical organizations, like clustering crystals, stand revealed. In an hour like this, so full of present joys and so prophetic of future triumphs in the prospective field of action looming up before us, it would be out of place to detain you with any set remarks not germane to the immediate object of the meeting. I beg, however, to be permitted to call your attention for a few moments to some of the circumstances connected with the relative position we hold at present.

The leading object of those who framed the Constitution of our National Association was to bring the representatives of all the legitimate interests of the profession together, so that by the mingling of mind with mind in the rapidly recurring anniversary meetings, the generous ambition of one might kindle a kindred impulse in another, and the rich and varied fruits of many intellects be made the common property of all. In placing the association upon a representative basis, it was justly claimed that if, to gain membership, it was necessary to have local societies, and necessary that individuals should not only become members thereof, but members in such standing as to command the suffrages of their fellows—a strong inducement, both for social organization and individual improvement, would be afforded. As, however, there were, and still are, extensive regions of country in which neither medical societies, nor colleges, nor hospitals exist, and yet from which a few reputable physicians might come, a provision was made by which such could become *temporary* members, or members by *invitation*, on recommendation of one or more of the regular members. I have alluded to these provisions now because several gentlemen have applied to me from distant quarters, who have not become members of our State society, to be appointed delegates to the National Association. It is eminently proper that they should have so applied to me, and I wish to aid them in their laudable desire of participating in its meetings to the full extent of my ability—in fact, I take pride in so doing; for I consider it the greatest distinction of my life to have been placed by the profession of the State in a position to enable me

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to contribute, in the slightest measure, to the success of an institution on which hang all my hopes for the future of American medicine.

In accordance with the action of the society at the last meeting, I have appointed as many as I thought it expedient under existing circumstances to act as delegates to the American Medical Association. As soon as the pro rata number is ascertained from the increase of the members we are here assembled to elect, the names of these will be announced. I deemed it best to make these appointments beforehand, after consulting the views of the other executive officers of the society, in order to give appointees the opportunity for deciding whether they could accept, and to afford such the necessary time for preparation. I have reason to feel assured that not one of our delegates will fail to make an appearance and that California will be well represented.

It only remains for me now, fellow members, to congratulate you upon the success which has crowned our efforts in resuscitating the State society, and to felicitate you upon the privilege, which may never be extended to any of us again in this generation, at least in California, of participating in a social and professional reunion, whose memories will afford perennial delight as we travel on our respective roads down the declivity of life. Believe me, gentlemen, we cannot value this privilege too highly; we cannot serve the cause we are engaged in with an energy of purpose or a faithfulness of zeal too steadfast or ardent. That cause is found in common property, in common origin, in common fellowship. That property is the bequest of wise and virtuous ancestors. That origin is our venerable profession. That fellowship is our own American association, the bond of our union in medicine and science. Let us not be insensible to the sacredness of that inheritance, to the dignity of that parentage, to the value of that fellowship; and while we remember our social and individual duties, let us not prove unmindful of all that has been done by the eminent in talent and learning and virtue of former days; and for all that is now doing in our own land and throughout the world, let us have the soul to realize the magnitude of our obligation and the dignity of their enterprise. So shall we share its glorious rewards in time and eternity—"for I say unto you, many have desired to see the day that ye see, and have not."

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INTRODUCTIONS.

Dr. H. Gibbons, Sr., stated that time would not permit formal introductions to their Eastern friends. If a California Doctor meet another from the East, let him go up to him and take him by the hand and introduce himself, the idea being that all are sons of Hyprocrates.

A recess was then taken for half an hour, to give the Board of Censors an opportunity to make their report.

The Censors reported that one hundred and one names of candidates for membership had been laid before them; of whom seventy-three presented the requisite vouchers, and were recommended by them for election. They were accordingly elected, and the remainder of the list was laid over for future action. Following is a list of the new members, with residence and school, and date of graduation:

Name.	*Residence.*	*School.*	*Date.*
Alemby Jump	Downieville	Western Reserve Medical College	1849
Erastus W. Foote	Lockeford	Vermont Medical College	1840
H. M. Biggs	Santa Barbara	University of California	1870
Chas. B. Bates	Santa Barbara	Toland Medical College	1868
Henry M. Fiske	Sutter Creek	St. Charles University, Med'l Dep'nt	1843
		University of Pacific	1870
Wm. Reiley Fox	San Leandro	Chicago Medical College	1863
E. B. Harris	North San Juan	New York Medical University	1846
E. B. Robertson	San Andreas	Medical Dep'nt, University of Pacific	1864
J. E. Pelham	Shasta	Transylvania Medical College	1839
John P. Reiley	Marysville	Medical College of City of New York	1846
George C. Chase	Downieville	Dartmouth Medical College	1848
Robert M. Hunt	Nevada	Castleton Medical College	1850
		Albany Medical College	1869
Thomas C. Hanson	Oakland	Toland Medical College	1867
Wm. W. Hays	San Luis Obispo	Medical Depa'nt, Georgetown College	1861
J. R. Bradway	Red Bluff	Rush Medical College	1847
J. S. Adams	St. Helena	Albany Medical College	1855
G. W. Graves	Petaluma	University of Virginia	1868
Eustace Trenor	Oakland	College Physicians and Surgeons, N. Y.	1856
J. N. Brown	Jan José	Ohio Medical College	1860
H. H. Warburton	Santa Clara		
H. L. Nichols	Sacramento	Bowdoin Medical College	1845
Gerrard G. Tyrrell	Sacramento	F.R.C.S. & King's & Queen's Col., Ire'd	1850
E. R. Taylor	Sacramento	Toland Medical College	1865
C. S. Haswell	Sacramento	Toland Medical College	1866
W. T. Wythe	Sacramento	Med. Dep't, Willamette University, O'n.	1867

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Names.	*Residence.*	*School.*	*Date.*
R. H. Plummer	Silveyville	Toland Medical College	1866
L. McGuire	Folsom	Toland Medical College	1868
Thomas C. Stockton	San Diego	Bellevue Hospital Medical College	1868
A. Trafton	Sacramento	Louisiana Medical College	1848
B. H. Pierson	Woodland	University of Missouri	1846
W. S. Thorne	San José	Bellevue Hospital Medical College	1869
R. W. Murphy	Sacramento	Bellevue Hospital Medical College	1871
T. T. Cabanis	Siskiyou	University of Maryland	1849
George H. Evans	Dixon	Nashville Medical College	1869
J. D. Callaghan	Monterey	University of Louisiana	1851
C. S. Coleman	San Leandro	Geneva Medical College	1850
H. H. Toland	San Francisco		
Wm. C. Jones	Forest Hill	Bellevue Hospital Medical College	1871
Samuel F. Sproul	Chico	Jefferson Medical College	1855
Jos. F. Wayland	Chico	University of Louisville	1855
W. Fitch Cheney	Chico	University of New York	1862
C. M. Bates	San Francisco	University of Pennsylvania	1855
J. C. Tucker	San Francisco	University of New York	1848
V. Bruce Gates	San Francisco	Jefferson Medical College	1871
H. S. Gates	San Francisco	Geneva Medical College	1836
N. R. Davis	San Francisco	College Physicians and Surgeons, N. Y.	1848
E. T. Barber	Eureka	Toland Medical College	1866
A. Thorndike	Stockton	Jefferson Medical College	1850
E. H. Bryan	San Francisco	University of Missouri	1852
E. Kelley	San Francisco	University of New York	1857
James A. Brown	Sutter Creek	University of Louisville	1844
C. E. Holbrook	Benicia	University of Pacific	1863
A. A. O'Neil	San Francisco	Toland Medical College	1867
C. A. Toland	San Francisco	Toland Medical College	1869
H. B. Davison	Colusa	Jefferson Medical College	1871
H. Neal	San Juan South	Jefferson Medical College	1859
C. T. Sage	San Francisco	University of California	1870
N. Williams		Geneva Medical College	1841
A. J. Cory	San José	Ohio Medical College	1860
Benj. Cory	San José	Ohio Medical College	1845
Benj. Shurtleff	Shasta	Harvard Medical College	1848
C. N. Kirkpatrick	Redwood City	Ohio Medical College	1848
G. W. Dutton	Tomales	University of Pennsylvania	1869
S. H. Rupe	Healdsburg	Toland Medical College	1866
L. Seawell		University of California	1870
Laurent Lasvignes		University of Montpelier, France	1847
M. C. Parkinson	Ione City	Starling Medical College, Ohio	1857
Charles Boreman	Jackson	William and Mary Medical College	18—
H. G. Pike	Sanel	Vermont Medical College	1856
E. A. Stockton	Stockton	Ohio Medical College	1853
David Wooster	San Francisco	Western Reserve Medical College	1849
. Ray	Woodland	College Physicians and Surgeons, Iowa	1871

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The following named physicians were elected honorary members: J. H. Wythe, M. D., D. D.; P. Lansdale, Med. Inspector U. S. N.; J. M. Brown, Surgeon U. S. N.; David Kindelberger, Surgeon U. S. N.; W. E. Taylor, Surgeon U. S. N.; S. F. Shaw, Passed Assistant Surgeon U. S. N.; W. M. Nickerson, Assistant Surgeon U. S. N.; C. McCormick, Surgeon U. S. A.; R. Murray, Surgeon U. S. A.; C. C. Keeney, Surgeon U. S. A.; E. Bentley, Assistant Surgeon U. S. A.; P. W. Randle, late Assistant Surgeon U. S. A.

The permanent members being one hundred and fifty-six in number, the society was entitled to sixteen delegates to the National Association. The appointments were made by the President, as follows: J. J. Franklin, Sonora; S. D. Campbell, Suisun; A. B. Mehring, Woodland; F. W. Todd, Stockton; Luke Robinson, Colusa; A. B. Stout, Geo. Hewston, R. Beverly Cole, Henry Gibbons, Jr., J. D. Whitney, San Francisco; G. L. Simmons, W. R. Cluness, Sacramento; D. B. Hoffman, San Diego; W. W. Ross, Watsonville; A. Thorndike, Stockton.

Dr. Gibbons, Jr., stated that the society was entitled to sixteen delegates, and moved that Dr. Thomas M. Logan, President of the society, be elected as such delegate. Carried.

Dr. Logan stated that, as he was already appointed a delegate from the State Board of Health, he would nominate Dr. A. S. Ferris, of San Francisco, to serve in his stead.

Dr. Whitney moved, in recognition of the zeal manifested by the gentlemen from abroad in coming to this city to attend the National Medical Association, that all accredited delegates be elected honorary members of the society.

An amendment was offered that only those who came from beyond the Rocky Mountains be elected.

The motion, as amended, was put to vote and unanimously adopted.

THANKS.

On motion ot Dr. B. D. Dean, the thanks of the society

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were tendered to the proprietors of Pacific Hall for the free use of the hall.

Dr. Stout moved that the thanks of the society be tendered to the President for the faithful and earnest manner in which he had attended to the duties of his office, and which have accomplished its success. Carried.

CLOSING REMARKS.

Dr. Logan, in response, made the following remarks:

While returning my best thanks for the kind intentions of the gentleman who has just introduced the resolution, so flatteringly carried, permit me to say that I cannot take to myself the credit of the gratifying fact, that the success which has crowned our efforts, in the resuscitation of the California State Medical Society, is in any great measure due to my feeble efforts. Not unto us, but unto those noble medical representatives who have traversed this vast continent to pour the acquisitions of their devoted lives into California's treasury of science, are the glory and the honor all due. We have sown the good seed, they have watered it, and let us trust that it will spring up and grow and expand, year by year, putting forth new and vigorous branches, bearing fruit unto perfection. And, gentlemen, I fondly hope that the first fruits will greet our eyes in Sacramento next October, where and when I shall be proud to meet you, one and all, and welcome you, with the "Well done, good and faithful servants."

An invitation was extended to the society to attend the Anniversary Address of Dr. H. R. Storer, before the Society of American Medical Editors; whereupon the meeting adjourned.

A. B. Nixon,
Henry Gibbons, Jr.,
Secretaries.

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FIRST ANNUAL MEETING.

The first annual meeting of the State Society after the reorganization convened in the Senate Chamber of the Capitol, at Sacramento, on Wednesday, October 11th, 1871, at 1 o'clock P. M. The President, Dr. T. M. Logan, in the chair.

Dr. A. B. Nixon, Chairman of the Committee of Arrangements, delivered the following

ADDRESS OF WELCOME.

GENTLEMEN OF THE STATE MEDICAL SOCIETY: On behalf of the Committee of Arrangements, and on behalf of the medical fraternity of Sacramento, it becomes my duty as well as my pleasure, as Chairman of said Committee, to extend to each and all of you a most cordial and hearty welcome, and it is with much pride and satisfaction that I can so justly congratulate you, and particularly your President, upon the eminent success of the reorganization of the State Medical Society. Upon our roll of membership we now number one hundred and fifty-three names, with a representation from almost every county in the State. Of the necessity for the reorganization of the State Medical Society but few members of the profession can now reasonably doubt, as the object of the movement (which is now apparent) was to cultivate a fraternal feeling, and to develop in the highest degree possible our professional good name and usefulness as medical practitioners. In the discharge of our duty to ourselves as professional men, and to the communities with whom we reside, we can reasonably expect a just reward, but we should ever bear in mind that with the American people nothing is quite so popular as success.

A programme in accordance with the regular order of business

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has been prepared by the Committee of Arrangements, which is herewith respectfully submitted for the consideration of the society. Much work has been mapped out by your committee, and but little time allotted for its transaction. It was thought, however, that with diligence on the part of the society, the business could be transacted in the course of two days, with evening sessions, and as this is the busy season of the year with physicians generally, it was thought best not to prolong the session beyond that time.

The Sacramento Society for Medical Improvement has made arrangements for a collation and social entertainment to be given to the State Medical Society immediately after adjournment on to-morrow evening, and it is hoped that members will avail themselves of the opportunity of meeting with them on that occasion. To cultivate each other's acquaintance and to impart to each other our experience, is one of the first objects of association, and with that come mutual friendships and kind offices. With organization comes strength, and strength always commands respect; but our portals should be somewhat guarded against unworthy applicants for membership. A strict compliance with our code of ethics should be rigidly and firmly enforced, as by so doing we not only protect honorable medical men, but we thus protect the commmunity with whom we reside from quackery and empiricism. We should have no dogmas or creeds in the practice of medicine. The universal field of nature is ours, and no pent up Utica should restrain us. The portals of our institutions of learning should be alike free to all, and nothing but a knowledge of the positive science in medicine should be considered as a fixed fact, everything else being theoretical and problematical. Everything not scientifically demonstrated must necessarily remain an open question. I have great hopes for our profession. Medical men everywhere are following more closely the paths of nature in their pathological researches. By the aid of the microscope, the normal and healthy condition of the bones, soft tissues and fluids of the body are distinguished from those which are unhealthy and diseased. Diagnoses arrived at in this way amount to almost, if not quite, positive science. By all means we should try to know the truth, and until it is revealed to us by science we should ever remain unsatisfied. Miracles are not much thought of in our days, and it is sincerely to be hoped that the days of superstition in regard to medicine, if not in everything else, are rapidly drawing to a close. Life, health, sickness and death are all

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controlled by natural laws fixed and inexorable; but there is no stand still point in all nature's vast domain. Everything is changing by the powers of natural laws.

Hoping that our society may continue to flourish and that its members may have many pleasant reunions, I now announce that the society is ready for the transaction of the business of this its first annual session.

Dr. F. W. Hatch, Chairman of the Board of Censors, reported the names of the following gentlemen for election:

Name.	*Residence.*	*School.*	*Date.*
W. H. Wells	Dixon	Rush Medical College	1849
Ed. M. Curtis	Sacramento	University of Vermont	1862
Matthew Gardner	Davisville	McGill University	1871
O. Harvey	Galt	Rock Island Medical College	1844
S. B. Brinkerhoff	Santa Barbara	Buffalo University	1850
E. B. Harris	San Juan North	University of New York	1846
J. H. Urich	Michigan Bar	Ohio Medical College	1849
T. T. Cabanis	Siskiyou	University of Maryland	1848
H. W. Nelson	Sacramento	Canada School Medicine and Surgery	1848
John F. Morse	San Francisco	New York Medical College	1848
T. A. Snider	Sacramento	University of Louisiana	1848

It was moved that the election of officers be postponed until October 12th.

Lost.

The roll was called, and Drs. H. Gibbons, Sr., Franklin, Simpson, Nixon, Grover, Stout, Ferris, Logan, F. W. Hatch, Simmons, Todd, Hardy, Montgomery, Cluness, Dubois, Oatman, Nichols, Tyrrell, Taylor, W. T. Wythe, Plummer, Trafton, Murphy, Cabanis, J. H. Wythe, Curtis, Gardner, Haswell, Harvey, Harris, Urich, Nelson, Cheney, Morse and Cushing were present.

The annual election being in order, the following officers were duly chosen:

President—Henry Gibbons, Sr., M. D., of San Francisco.

Vice Presidents—G. A. Shurtleff, M. D., of Stockton; F. W. Hatch, M. D., of Sacramento; F. W. Todd, M. D., of Stockton; J. F. Montgomery, M. D., of Sacramento.

Corresponding Secretary—W. T. Wythe, M. D., of Sacramento.

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Recording Secretaries—Clinton Cushing, M. D., of Oakland; W. T. Grover, M. D., of San Francisco.

Treasurer—Arthur B. Stout, M. D., of San Francisco.

Dr. Logan, the retiring President, introduced Dr. Gibbons, who made the following remarks:

If I had ever doubted my being a diffident person, the doubt is dispelled by my feelings on the present occasion. You have done me an honor which I appreciate the more highly because it is your voluntary offer, unsolicited on my part. I will not occupy the valuable time of this session by any extended remarks, but content myself by promising to emulate my predecessor in advancing the interests of this society, though I cannot expect to equal him in industry and efficiency. Your aid, individually, will be indispensable to me, and I shall strive to requite it by the kindest regard and consideration for every professional brother.

The Board of Censors reporting favorably, the following gentlemen were unanimously elected members of the society:

Names.	*Residence.*	*School.*	*Date.*
Anderson Strong		St. Louis Medical College	1860
Thomas Ross	Woodland	McGill University	1863

On motion, the election of a Board of Censors was postponed until the place of next meeting was selected.

The minutes of the adjourned meeting were read and adopted.

Dr. H. Gibbons, Sr., Chairman of the committee, read a report on Practical Medicine.

Adjourned until 7 o'clock, P. M.

EVENING SESSION.

The society reassembled at 7½ o'clock P. M., a large number of ladies and gentlemen being present.

The President introduced Dr. Logan, the retiring President, who delivered the annual address, as required by the Constitution.

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An invitation was received from Dr. Nixon, surgeon of the Central Pacific Railroad Hospital, to visit that institution.

Accepted.

Dr. Cheney offered an amendment to the Constitution, providing that no physician be elected a member of this society from a county having a local society, unless he be a member of the same, or unless there be some special reason for his election.

Laid over to next meeting, according to law.

SECOND DAY.

The society met at 10 o'clock A. M.

In the absence of the President, Dr. Hatch, Vice President, took the chair.

Dr. Simmons, of Sacramento, Chairman of the Committee on Surgery, read a report on "Practical Surgery."

Dr. Lane, of San Francisco, from the same committee, read a paper on "Coxalgia."

Both papers were referred to the Publication Committee.

Dr. Cheney, of Chico, read a paper on "Skin Grafting."

Referred to the same committee.

An invitation from the Johnson Brandy and Wine Manufacturing Company, to inspect their works during the noon recess, was received, and a number of the members visited the establishment accordingly.

Professor Carr, of the State University, read a paper on the "Genesis of Crime."

On motion of Dr. Cole, a vote of thanks was tendered to the author, and a copy requested for publication.

Adjourned to 2 o'clock P. M.

AFTERNOON SESSION.

At two o'clock P. M., the society met. Dr. Hatch in the chair.

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The Board of Censors reporting favorably, the following gentlemen were elected members: Drs. Stillwagon, of Napa; Pardee, of Oakland; Roberts of ———, and Rule, of Napa.

On motion of Dr. Lane, the rules were suspended for the purpose of electing a Legislative Committee, who should represent the society before the Legislature, for the purpose of accomplishing any legislation which might be advisable. Drs. Stillwagon, of Napa; Harvey, of Sacramento; Pardee, of Oakland; Brinkerhoff, of Santa Barbara, and Logan, of Sacramento, were elected.

Papers were read, and referred to the Committee on Publication, as follows:

Dr. Hoffman, of San Diego, on the "Medical Topography of San Diego County."

Dr. M. H. Biggs, of Santa Barbara, on the "Medical Topography of Santa Barbara."

Dr. J. H. Wythe, of Santa Clara, on "Ovariotomy."

Dr. R. H. Plummer, of Solano, on the "Treatment of Typhoid fever."

Dr. W. T. Wythe, of Sacramento, on "Quarantine."

Dr. G. W. Graves, of Petaluma, on the "Medical Topography of Petaluma," Sonoma County.

On motion, it was determined to elect forthwith a Committee on Publication, and the following gentlemen were chosen: Drs. Logan, of Sacramento, Chairman; Cluness, of Sacramento; Grover, of San Francisco; Cushing, of Oakland, and Wythe, of Sacramento.

A committee, composed of Drs. Cabanis, of Siskiyou; Franklin, of Sonora, and Oatman, of Sacramento, was appointed to nominate a Board of Censors.

The committee subsequently reported the following named gentlemen, who were duly elected, viz: Drs. Carr, Pinkerton and Van Wyck, of Oakland; Dr. Cheney, of Butte, and Dr. Franklin, of Tuolumne.

The subject of the next place of meeting was then taken up, and Oakland, Stockton, San José and Marysville were put

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in nomination. The vote was taken by ballot, and Oakland was designated by a decided majority.

Dr. Murphy, of Sacramento, exhibited an instrument which he had contrived for reducing fracture of the lower jaw, accompanying the exhibition with some explanatory remarks. The subject was referred to the Committee on Publication:

Dr. Stout, of San Francisco, from the committee previously appointed, made the following report on the raising of cinchona, which was accepted and referred to the Committee on Publication:

The committee on this subject report that during the year no facilities have offered which could be used to promote the cultivation of the cinchona tree in California. The committee, however, report progress, and ask for further time. The project is entertained that this well approved subject may be availed of to obtain, through legislative action, the appropriation of lands, not only to try the cultivation of the cinchona tree, but for the experimental culture of any other desirable plant; or, in other words, the foundation of a State botanical and zoological farm. Such an appropriation would render a permanent service and honor to the State, while the care and expense devoted to the one single object might be lost by the failure of the experiment. From such an appropriation a magnificent botanical garden might be created. Associated with a State sanitary institution and thermal resort for chronic diseases, it would form a new and superb institution. Forming, as it would, the permanent residence of several competent physicians, botanists and naturalists, this would secure for it efficient superintendence, while oftentimes the voluntary labor of many grateful convalescents, or of persons infirm from various causes, would diminish the expenses. In this prospect, your committee respectfully ask to be continued.

ARTHUR B. STOUT,
THOS. M. LOGAN.

The committee was continued acordingly.

Dr. Todd, Chairman of the Committee on the Registration Law, made a report, recommending, among other things, that the records of marriages, births and deaths be collected by the County Assessors.

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The report was referred to the Committee on Legislation, with a recommendation that they prepare a proper law on the subject, and that the duty of Registrar be connected with the State Board of Health.

Dr. Harvey, of Galt, gave notice of an alteration of the Constitution of the society, which was laid over by rule until the next annual meeting. It is in substance that Section 1, Article IV, be amended by striking out, in the second line, the words "second Wednesday in October," and inserting "second Wednesday in April," as the time for the annual meeting.

Adjourned until 7½ o'clock P. M.

EVENING SESSION.

The society was called to order by Vice President Hatch.

On motion, the rules were suspended on a suggestion to appoint a committee in the matter of the formation of a mutual aid society, for the relief of indigent members and their families.

The Chair appointed as the committee, Drs. Todd, of Stockton; Cole, of San Francisco, and Logan, of Sacramento.

Dr. E. M. Curtis, of Sacramento, read a paper on the subject "Why do we wear Spectacles?" illustrating his ideas with a series of diagrams.

Dr. Smith, of San Francisco, read a paper upon "Diseases of the Eye and Ear, and the proper treatment of the same."

Dr. Cushing, from the Committee on the Relations of Apothecaries and Physicians, presented a report, including the following resolution:

Resolved, That the fact of a doctor of medicine being engaged in the manufacture and sale of any secret or patent medicine, or in any way promoting the use of them, shall render him ineligible as a member of this society.

Report received and adopted.

Certain objections, which had been urged against the admis-

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sion of Dr. Jackson, of Yolo County, having been withdrawn, and the Board of Censors having reported favorably upon his nomination, he was duly elected.

On motion, a vote of thanks was tendered Dr. H. L. Nichols, Secretary of State, for procuring the use of the Senate Chamber.

The following resolution, offered by Dr. Montgomery of Sacramento, was adopted:

Resolved, As the sense of this society, that the subject of medical ethics should receive a larger share of attention in the medical universities and colleges of the country, to the end that the true principles inculcated therein may be more thoroughly impressed upon the minds of the students, and, in consequence, more faithfully and scrupulously observed by them in their subsequent professional career.

The following resolution, offered by Dr. Cole, of San Francisco, was adopted:

Resolved, That the Board of Censors shall recommend no candidate for membership until he shall have presented his diploma or other evidence of being a graduate of a recognized school, and of good standing; and that no voucher of a single member shall be considered sufficient evidence of his qualifications.

The Committee on Certificate of Membership reported one which they thought appropriate, and the report was adopted.

The society then adjourned *sine die*.

CLINTON CUSHING,
W. T. GROVER,
Secretaries

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HONORARY MEMBERS.

The following roll, which has been forwarded by the Permanent Secretary of the American Medical Association, comprises the names and address of all the delegates, from beyond the Rocky Mountains, who attended the meeting in California in 1871, and to whom the Honorary Diploma of the society has been transmitted:

ALABAMA.

J. S. Weatherby,	*Montgomery.*
M. H. Taylor,	*Huntsville.*

CONNECTICUT.

E. K. Hunt,	*Hartford.*
J. W. Phelps,	*Wolcotville.*
W. Woodruff,	*Thomaston.*
H. M. Knight,	*Lakeville.*
Charles L. Ives,	*New Haven.*
B. H. Catlin,	*West Meriden.*
Alfred North,	*Waterbury.*

ILLINOIS.

A. Fisher,	*Chicago.*
V. L. Hurlbut,	*Chicago.*
W. A. Knox,	*Chicago.*
D. L. Crist,	*Bloomington.*
N. S. Davis,	*Chicago.*
J. O. Hamilton,	*Jerseyville.*
G. W. Hewitt,	*Franklin Grove.*
J. P. McLanahan,	*Norwood.*
A. L. McArthur,	*Rockford.*

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INDIANA.

James A. Adrain,	*Logansport.*
H. M. Harding,	*Lawrenceburg.*
J. H. Helm,	*Peru.*
George Sutton,	*Aurora.*
George W. Mears,	*Indianapolis.*
James F. Hibberd,	*Richmond.*
J. F. Hilliard,	*Evansville.*
Jas. P. De Brilen,	*Evansville.*

IOWA.

A. C. Roberts,	*Port Madison.*
S. B. Thrall,	*Ottumwa.*
J. Williamson,	*Ottumwa.*
J. C. Hughes,	*Keokuk.*

KANSAS.

D. W. Stormont,	*Kansas.*

KENTUCKY.

J. D. Jackson,	*Danville.*
T. N. Wise,	*Covington.*
D. W. Yandell,	*Louisville.*

MARYLAND.

John Morris,	*Baltimore.*
D. A. O'Donnell,	*Baltimore.*

MASSACHUSETTS.

George N. Thompson,	*Boston.*
Ephraim Cutter,	*Boston.*
H. R. Storer,	*Boston.*
E. B. Moore,	*Boston.*

MICHIGAN.

B. Barnum,	*Schoolcraft.*
L. S. Stevens,	*Three Rivers.*
S. N. Douglass,	*Ann Arbor.*
Edward Kane,	*Detroit.*

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MISSOURI.

J. S. Moore,	*St. Louis.*
J. B. Johnson,	*St. Louis.*
F. C. Castlehun,	*St. Louis.*
W. S. Golding,	*St. Louis.*

MINNESOTA.

C. P. Adams,	*Hastings.*
A. A. Ames,	*Minneapolis.*
A. E. Ames,	*Minneapolis.*
N. B. Hill,	*Minneapolis.*

NEBRASKA.

John Black,	*Plattsmouth.*

NEW HAMPSHIRE.

J. W. Parsons,	*Portsmouth.*
J. L. Swett,	*Newport.*

NEW JERSEY.

W. Elmer,	*Bridgeton.*
J. S. Crane,	*Elizabeth.*
D. M. Sayre,	*Newton.*

NEW YORK.

James H. Armsby,	*Albany.*
H. P. Babcock,	*Buffalo.*
James P. White, Jr.,	*Buffalo.*
J. H. Rathbone,	*Jamestown.*
T. D. Strong,	*Westfield.*
C. V. Barnett,	*Coxsackie.*
H. K. Bellous,	*Norwich.*
A. J. Long,	*Whitehall.*
G. S. Winston,	*New York City.*
S. G. Wolcott,	*Utica.*
J. W. Scribner,	*Farrytown.*
B. F. Dawson,	*New York City.*
E. M. Curtis,	*Oswego.*
George Douglas,	*Oxford.*

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OHIO.

A. E. Heighway,	*Cincinnati.*
E. Stanley,	*Sandusky City.*
G. Mendenhall,	*Cincinnati.*
B. S. Brown,	*Bellefontaine.*
R. S. Gilchrist,	*Delgraff.*
J. W. Russell,	*Mt. Vernon.*
J. W. Shiveley,	*Kent.*
Wm. Thomas,	*Bellefonte.*
D. B. Colton,	*Portsmouth.*
W. J. McDowell,	*Portsmouth.*
A. B. Hovey,	*Tiffin City.*
J. A. McFarland,	*Tiffin City.*
R. M. Denig,	*Columbus.*
G. Bruehl,	*Cincinnati.*
A. H. Agard,	*Sandusky.*
H. J. Dunahue,	*Sandusky.*
A. B. Jones,	*Portsmouth.*
O. M. Langdon,	*Cincinnati.*

PENNSYLVANIA.

W. J. Asdale.	*Pittsburg.*
James King,	*Pittsburg.*
A. M. Pollock,	*Pittsburg.*
R. S. Sutton,	*Pittsburg.*
R. B. Mowry,	*Alleghany City.*
W. M. Findley,	*Altoona.*
R. H. Townsend,	*Philadelphia.*
Alfred Stille,	*Philadelphia.*
F. G. Smith,	*Philadelphia.*
N. L. Hatfield,	*Philadelphia.*
J. J. Zitzer,	*Carlisle.*
John Curwen,	*Harrisburg.*
W. S. Duncan,	*Brownsville.*
D. J. Bruner,	*Lancaster.*
George A. King,	*Lancaster.*
M. F. Robinson,	*Newville.*
J. F. Ross,	*Clarion.*
W. L. Atlee,	*Philadelphia.*
B. Gillett,	*Franklin.*
W. B. Atkinson,	*Philadelphia.*

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RHODE ISLAND.

George L. Collins,	*Providence.*
L. F. C. Garvin,	*Lonsdale.*

VERMONT.

Henry Janes,	*Waterbury.*
H. D. Holton,	*Brattleboro.*

WASHINGTON, D. C.

Joseph M. Toner,	*Washington.*

WEST VIRGINIA.

R. H. Cummins,	*Wheeling.*
E. A. Hildreth,	*Wheeling.*
John Frissell,	*Wheeling.*
E. H. Moore,	*Wellsburg.*

WISCONSIN.

J. K. Bartlett,	*Milwaukee.*
D. Mason,	*Prairie du Chien.*

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ANNUAL ADDRESS.

DELIVERED BEFORE THE CALIFORNIA STATE MEDICAL SOCIETY.

By THOMAS M. LOGAN, M. D., President.

Gentlemen: In accordance with the second section of the third article of the Constitution of the Medical Society of the State of California, I appear before you in the double capacity of presenting what may be called an opening and a valedictory address. Permit me, therefore, while traversing the narrow isthmus which intervenes between the termination of one presidential term and the commencement of another, to invite your attention to a consideration of subjects relating to the *Past*, *Present* and *Future* interests of this society, which are to become not only matters of medical history in our State, but are calculated to exercise an important influence on the character of the physician, and to give to his employments permanent and extended usefulness.

THE PAST.

The retrospect, which first claims our attention, must necessarily, from the limits of this address, be brief and exceedingly imperfect; pardon me, if it unavoidably appears egotistic. Looking back only four years, when your speaker was on the eve of carrying out a long-cherished plan of participating in one of the annual meetings of our National Association, which

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was to be held in Cincinnati, and of attending shortly afterward the International Medical Congress in Paris, there was not in existence one solitary medical society in California to which he could apply for the necessary vouchers for proper recognition in those bodies. The only medical organization at that time extant in California was the Toland College, and to that institution I am indebted for the credentials which procured for me what I shall ever gratefully regard as the highest privilege of my life. At the former meeting, just alluded to, it was eloquently remarked by one of the Vice Presidents elect* that, "in the great republic of science, all geographical lines should be abolished." The idea forced upon my mind by the utterance of these words—of holding one of the sessions of the National Association in California, and on which hinged my every hope of restoring the *morale* of the profession in the State of my adoption—was communicated to several of the delegates from other States around me—three of whom, Drs. Davis, Storer and Toner, were present at the late meeting in San Francisco—who assured me of its feasibility, if ever the transcontinental railroad should be finished. At the time we all had our misgivings about that stupendous enterprise, and dared not encourage too strongly the hope of our *projet*, based thereupon, culminating so soon in its late grand finality. Mark! I was at that time still under the incubus of seventeen years isolation in the then comparatively sequestered City of Sacramento. But when, a few months afterwards, I witnessed that palpable demonstration of the world's progress—the aggregate product of a world's skill and industry displayed, as never before, by the herculean labors of the Paris Exposition—when I contemplated its elevating combinations of grandeur and beauty, grace and harmony, and at the same time participated in the enthusiastic development of that medical conclave, the International Congress, when I heard the august President pro

* D. W. Yandell, M. D., of Kentucky, President Amer. Medical Association, 1871.

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tem.,* supported on the right hand and on the left by Palasciano, of Naples, and Teissier, of Lyons, exclaim from his proud position, in the memorable words of Louis XIV, "No longer do the Pyrenees obstruct the advancement of science," when I heard him declare that there were no more boundaries to its domain save the confines of barbarity—that mountains and seas and oceans opposed their barriers in vain—and to justify his assertion pointed to the banner of our country, and cited the Americans who had crossed the stormy Atlantic to attend this grand medico-ecumenical council—from that hour I felt assured that, though there might be difficulties in the way, still the word "impossible" had been erased from the vocabularies of the learned and scientific, and that we, too, in California, would soon receive our full measure of recognition, and take our place on the level of the civilized world. How well based was that assurance—how just was that conclusion—how full of significance were the words uttered by Bouillaud, the events of the last six months, and the large delegations from our State and county societies, our colleges, Boards of Health and other organizations, numbering sixty of the former and twenty-nine of the latter, to welcome our brethren from all parts of our common country, unmistakably attest. And now that the vision of four years has been verified, and we realize the fact that the rugged frontiers of sectionalism and nationality no longer curtail the domain of science—that, cosmopolitan in their aims and their objects, the votaries of medicine regard no impediments in their way—that they recognize no North nor South, no East nor West: I feel confident I can offer as a sentiment, to which all will with one accord assent, the glowing words of Pennsylvania's honored son, "the noblest Roman of them all"†: "That

* Bouillaud, who was afterwards elected President, and Virchow, of Berlin; Hallas of Prague; Lambl, of Kharkoff; De Meric, of London; Vleminckx, of Belgium, and Palasciano, of Naples, Vice Presidents.

† Samuel D. Gross, M. D., LL. D., President American Medical Association, 1868.

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there is not in this house one soul so selfish, so narrow minded, so sectional in its feelings and purposes, that would not, if called upon, pray with all the fervor of a Christian saint, that this American Medical Association might be cemented with an adamantine chain reaching from one extreme of this vast continent to the other, and binding us all in one common whole, indivisible now and forever, for the honor and glory not only of the medical profession but of America —of that America which the world hails as the land of Columbus and of Washington; the land of great men and of noble women; the asylum of the oppressed and the friendless; the home of the arts and the sciences, and of all that can adorn and ennoble human nature."

But, gentlemen, if there be none in this assembly who refuse assent to these sentiments, there are some outside of us—several, I am sorry to say, in San Francisco—who not only are not in accord with us, but are exhibiting a lack of efficiency in the noble cause in which our National and State societies are engaged; actually offering, it would seem, a hidden obstruction—endeavoring to frustrate all our efforts—to discourage our exertions, and to hinder the production of a healthy tone of action in the public mind. More than this, there have appeared disparaging statements, strictures on the proceedings of our National Association, in medical and other journals, within the past six months, which, to say the least of them, are as disingenuous as they are uncalled for. Some of these censorious writers pretend to be, equally with us, anxious for the elevation of a noble profession, the promotion of science, the good of humanity—but they take a strange method of showing such proclivities. If, instead of trying with the spirit of the Commune to pull down, they would convince us of a more practically effectual mode of building up the sacred temple of our divine science, according to the present designs and specifications, all of us are ready to accept the new proposal, and would rather thank than censure those who offer it. But, believing as I do, that they cannot improve upon

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the work commenced by a Davis, approved by a Chapman, a Knight, a Stevens, a Moultrie and a Buchanan (the founder, and the first President and Vice Presidents), and continuously prosecuted, up to the present hour, by men equally as illustrious from all sections of our favored land—men whose reputation is bounded by no geographical limits—citizens of the universal republic of science—I say, believing thus, I cannot refrain, as an officer of our National Association, bound by the duties of hospitality to our departed guests, from attempting to wipe out the aspersions which have been so ungenerously cast upon it.

But, gentlemen, before proceeding further, allow me to say that our National Association needs no defender of its well-earned fame from so humble a member as myself. As early as 1854, in the seventh year of its existence, and long before it possessed the claims now accredited to it in every civilized country, to the respect and fealty of American physicians, the editors of the *Association Medical Journal*, of Great Britain, published our code, and declared that this body were the most enlightened representatives of the greatest medical constituency in the world, of which it would be presumptuous in them to speak in terms of praise. They said of the volumes of the "Transactions" already published, that the duties of the standing committees had been thoroughly and ably performed; that the progress of medical science, as a whole—its prominent divisions into practical medicine, surgery and obstetrics—carefully and accurately traced in a series of reports, worthy of the highest praise, had been reported in a clear, concise and comprehensive manner. They, moreover, asserted their belief that our success, especially in ethical reform, depends solely in the moral power inseparable from a constitution based upon the principle of equal representation, which they affirmed they not only greatly admire, but can scarcely refrain from envying.*

* As quoted by Paul F. Eve, M. D., President American Medical Association, 1858.

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Upon such disinterested evidence—such full, free and candid confessions, and from such a high source—may well rest the claims of the American Medical Association for proof of the benefits it has conferred on the science of medicine. But it may be urged that since that date there has not been a commensurate advancement, and that the literary and scientific tone of its meetings fail to exalt the character of the association as a great national institution.

The most emphatic rebuke that can be made to those who would restrain our onward march by such unfounded and disorganizing remarks, is to remind them that the great object of the association, as set forth in the preamble of its Constitution, is to facilitate and foster friendly intercourse among its widely dispersed members. Each place selected for its meetings feels its character for hospitality involved in the extension of proper courtesies and kindnesses to the assembled representatives of the profession, who, on their part, are prepared and desirous to enjoy some relaxation from the harassing cares and toils of their business. To discuss any question fully and elaborately in the limited time allotted to the meetings is simply an impossibility. The real scientific part of the work is performed during the intervals by committees, and is referred to appropriate sections at the meetings to decide upon such contributions as are worthy of publication. The published transactions, therefore, embody the approved work of the association, and I challenge any impartial mind to say that the last seventeen volumes are not fully equal in learning, in ability and originality to those which have preceded them. There they are!—open them and read them; and I am satisfied you will agree with me in the opinion that the essays and reports contained therein would embellish the medical literature of any country. It would require a volume to make even an index of all that is contained in these Transactions; but to afford a tangible and substantial evidence of what has been effected by some of the plans for encouraging research and the investigation of special

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subjects, I will here state that there have been awarded during the last twenty years annual prizes of $100 to as many scientific papers of acknowledged ability and erudition, ranging indiscriminately over the wide domain of medicine and surgery. Besides these, there have been published carefully prepared reports of the various epidemics and diseases of every State and Territory in our widely extended country. Charts, maps, diagrams, tables and plates have been freely employed to illustrate these subjects so important to the general welfare; and every large city and sick community, with scarcely an exception, has had its hygienic condition explored and modified by these measures. The communications on deformities after fractures, reported by Hamilton, in the eighth, ninth and tenth volumes, constitute, on the high authority of Professor Eve, the basis of the best monograph on the subject ever issued from the press. "This work will do more than all others to check the reckless and speculative spirit of suits for malpractice against medical men; for, in addition to teaching a useful lesson to the profession in the prognosis of fractures, its testimony is so conclusive in reference to the usual results of these accidents, that judicial decision must hereafter be regulated by it."

On the profession, the association has exerted an influence of immeasurable good. By unaided intrinsic moral power, it has bound in one code of medical ethics thousands of physicians, in every section of our common country, free to act according to their own individual views, but yielding them in cheerful obedience to the decisions of the association. But the influence thus exerted has not been manifested only by the profession—it has been acknowledged by Legislatures, both State and Federal. I have only time to refer to the several registration laws connected with the three most important eras of human life—birth, marriage and death—passed, on recommendation of our association, in most of our sister States, and which I trust will soon be the case in California. The value of these laws is inestimable to the political economist,

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the legislator, the statesman and the medical philosopher; in fact to all who would have practical efforts for the alleviation of physical and moral evil, and the promotion of national prosperity and happiness, based on the solid foundation of material and authentic facts. Also, I would refer to the enactment of other important laws, through the same influence, by Congress, chiefly with the view of preventing the importation of adulterated and spurious drugs and medicines. The Federal law appears to have achieved all that could be expected from that source, but it is to be apprehended that its benevolent influences will soon be, if they are not already, to a certain degree neutralized by American manufactures. The same powerful influence must be brought to bear again on our State governments, to redress this grievance and correct many other destructive evils which endanger the people's safety, injure their health and curtail the blessings of life. Transcendently above all this, the association has aroused attention throughout the length and breadth of this confederacy to the imperfections of medical education, and demonstrated the necessity of raising the standard, constituting the requisite curriculum, preliminary to that degree which confers one of the highest honors of the profession to a par with that of other civilized countries. And although the only power to control the economy of the colleges which this body possesses is exclusively moral and advisory, not legislative nor legal; and while it may be true that all the recommendations submitted in reports from the committees to which the subject of medical education has been from time to time referred, have not yet been fully carried into effect, still it cannot be denied that progressive changes have been made, looking to a more thorough preparation and a more prolonged course of study, in all, or nearly all, the schools. Contemplate, therefore, in the spirit of calm philosophy, the objects and aims of the American Medical Association, the vast boundaries of its operations; look at it from any point of view, educational, medical, hygienic, legislative or ethical, and it presents a spectacle of

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moral power and grandeur to which the opponents of medical progress cannot long remain indifferent. It must command that respect and admiration—even if it fail to secure that co-operation—that is accorded to it in every part of the civilized world. I know not what may be the experience of others, but for myself I speak, that the certificate of delegate furnished by the American Medical Association in 1867, to the International Medical Congress in Paris, not only procured for me the most respectful consideration of that body, but proved a passport to every medical institution I desired to visit whilst in Europe. Nor did its influence stop here; for two years afterwards I was honored with a "carte de membre adherent," accompanying a copy of the proceedings of the Congress, with my name enrolled therein. In the well stored pages of these proceedings, with which any volume of our National Transactions will favorably compare, I read the assiduity and zeal with which the physicians of the European continent are working for the cause in which we are all engaged. May this unswerving fidelity and devotion to their profession, especially among our French confreres, who present the only bright and stainless page in the past year's history of their unhappy land, teach us, likewise, under all circumstances and embarrassments, in the language of the lamented Drake, to be "devoted to our profession, jealous of its character and ambitious of its honors."

Such, gentlemen, has been, and still is, the proud position achieved, both at home and abroad, by that central orb around which revolve the lesser lights of American medical organizations, contributing each its own peculiar ray, while receiving back again the concentrated effulgence of the whole profession. Shall we in California, at the remotest verge of the horizon, who have but recently been brought within the sphere of its quickening, animating power, so soon become oblivious of the radiant rythmus that thus struck upon the monotone of our discordant and isolated lives? I trust not. And this brings me to the second part of my subject—

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THE PRESENT.

If the American Medical Association had done nothing more for us in California than to evoke and consolidate that concerted action, twelve months ago, which we are this day assembled to ratify and commemorate, this society, at least, should ever gratefully cherish the memories of the past.

Though refusing for ten years to reorganize, the profession in this State had by no means been asleep. Keeping themselves well posted up with the advancement of their art, they were, as they still are, live men, "wide-awake" to the interests of humanity, and ready to re-engage, as they are now doing, in the noble cause of medical progress. But such was the discordant character of the *materiel* to be operated upon; such the various and conflicting interests which were to be reconciled; such the difference of tastes, habits and motives to be synthetically analyzed and resolved into one harmonious whole, that nothing short of the great impetus imparted by the advent of our National Association could have encompassed the desired end. Whatever credit, therefore, may attach to the reasonableness of the anticipations as to the probabilities of such a contingency formed by me in 1867, and terminating in just such a result as is now transpiring before our eyes, one fact is evident, that the medical mind has been stirred up to its deepest depths; that the spirit of improvement has breathed upon the masses, and by an aggregation of its scattered parts, the profession is this day found crystalized into groups or committees, containing elements of a new and beautiful combination, each one, while constituting an integral part of the great whole, contributing its quota to the symmetry and value of the collective affinities.

The programme before us shows that, in all the departments of our science, reports and contributions from every section of the State are on hand. There is, therefore, no ground for apprehending that the present meeting will not be a complete success, so far as it appertains to the advancement

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of our science and to the usefulness, honor and interests of the profession in California. Before engaging in the business proper that is thus laid out before us, allow me to call your attention to several subjects worthy of present consideration and which it were well to have disposed of at this time.

At the meeting before the last of the American Medical Association it was resolved, "That each State Society be requested to prepare an annual register of all the regular practitioners of medicine in their respective States, giving the names of the colleges in which they may have been graduated, and date of diploma or license." A recent number of the *Medical Record* states that the Medico-Historical Society of New York has procured a complete registration of all the regular physicians of the City and County of New York, and adds: "The benefit of this same registration has been incalculable to the profession of the metropolitan district. Every right-minded and honorable practitioner is in favor of it, and it is only those who have heretofore and do still show themselves unworthy of being in good company that speak against it. The sentiment of the profession here in regard to the usefulness and reliability of the system is such that there is no question as to the standing of those in the list, while a great deal of suspicion attaches to those whose names do not appear —a suspicion which, considering the care with which the work is done, cannot be explained on the score of the mere accident of omission. Aside from cementing the interests of the profession and preventing a misunderstanding as to the true relation of physicians to each other and to the community, numerous examples could be shown in which it has exercised a most salutary influence upon those who would otherwise have defied all restraint, admonition and discipline. In a word, it is the silent censor of the profession, which, while it never condemns, never speaks well of any one unless he is deserving of it." Another consideration also commends this scheme to our favor. The public have no means of dis-

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criminating here like they have in Europe, between the properly qualified physician and the mere pretender; inasmuch as, in this free country, any and every one has a right to make himself a doctor, by simply attaching a sign to that effect on his door, regardless of his education or qualifications. Without further discussing the importance of this matter, I would recommend that the society shall endeavor to procure, annually, to be published in our Transactions, and in some other form accessible to the public, the names of all the regular physicians in the State, and for that purpose that a committee, consisting of one from each county here represented, be chosen at this meeting. I beg also to suggest, as a means of doing much good among us, as well as of creating a bond of union between physicians in every part of the State, the incorporation into the society of a mutual aid for widows and orphans of deceased members. The basis of the method referred to is that of co-operative combination, and appeals to our sympathies and to the kindliest feelings of our nature. Let it not be said of the physician who spends his whole life in preventing and mitigating suffering, that he shrinks from a duty so solemnly imposed upon him by every obligation of humanity and the common brotherhood of a benevolent profession. For full details concerning the rate of assessments, initiation fees, form of Constitution, etc., I refer you to the twentieth volume of the Transactions of the American Medical Association.

The relation which the profession sustains with regard to trials by jury, in which medical testimony—or, rather, an opinion as an expert—is required, calls for some immediate action on our part. As is well known to you, there are two kinds of witnesses, ordinary and skilled, or those who testify only to what they have seen, and those who have no personal knowledge whatever of the case, but are supposed to possess a peculiar fitness for an expression of an opinion upon the question at issue. It is to medical men, acting in the latter capacity, to whom I am now referring; and the incompetency

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of those who are generally selected by advocates for the purpose of bolstering up their cause is bringing discredit upon us. It seems a great absurdity to introduce any expert as a witness. Under no interpretation of the term can the medical man be regarded as such. He is rather the *amicus curiæ*, and should have his status clearly defined; he should be freed from alliance with either party, and give his opinions always in writing, and upon an agreed statement of facts. In other words, he should arbitrate, and not testify. So long as the expert is introduced as a witness, the opposite party has the right to confront and cross-examine him; and however influenced the lawyer may be by the best and most laudable intentions, he frequently from sheer ignorance propounds his interrogatories in so unscientific a manner as to defeat the very end he has in view. The idea of an expert being cross-examined, for the purpose of testing his professional knowledge, by a layman, is not only unphilosophical, but absolutely ridiculous. "The entire effect and benefit of his participation in any trial," says Ordronaux,* whose views I here adopt, "is thus mutilated, deformed and nullified by the legal paradox which assumes him to be a witness. Witness to what? His own opinion, only. In order to obviate the effects of these contradictions in the laws of evidence—since, while the expert is called to express an opinion, he must utter none which sounds to a determination of the case at issue—it would be well, for it is entirely possible, to remove all experts from the field of testimony and place them in that of arbitration, so far as any particular scientific question is to be decided. For this purpose, whenever a scientific question arises in an action at law, whose solution is material to the determination of the matters in issue, let a feigned issue be made on this point and referred for judgment, upon evidence agreed upon, to three experts, one to be selected by each party litigant, and the third by the Court; such experts to sit and determine at once

* Vol. XX, Trans. Am. Medical Association, p. 577.

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the question in dispute, and their opinion to be received by the jury as conclusive of the issue tried by them." The advantages to be derived from such a procedure will at once be apparent to any one at all conversant with the subject, and exempt the medical expert from the annoyances, vexations and irritations of a personal discussion with counsel. To meet the requirements in this case, as well as in other cases to be brought to your notice, I would recommend the appointment of a Legislative Committee. Let a simple clause be introduced into existing codes of procedure, or a special statute be enacted with a provision for a reasonable fee to be paid to the experts whose services are required. The same committee might also urge the propriety of having our Transactions published by the State, as is done in some of our sister States. This is only our due; and we have the same right to its recognition as the agricultural and other interests. All that contributes to the general welfare inures to the benefit of the State. Why are we assembled now? Why do our medical societies meet monthly and oftener, at the sacrifice of our time and business? It is for the advancement of science—for the public good.

My attention has recently been called, by a correspondent in Alabama, to a report of a special committee, appointed by the Mobile Medical Society, on the question of exacting fees for a certificate, as family physician, to applicants for life insurance. The committee* think that the profession are authorized in making charge for this service, and that proper professional respect urges them to do so. Their reasons for so doing, as set forth, are that "the proper filling out of such certificate demands the physician's time, which is always valuable to him. It demands accurate professional knowledge, which is his capital; and it involves considerable responsibility, which is always taken into account when adjusting the value of his services. It is, therefore, a reasonable and legiti-

* Drs. Jerome Cochrane, Geo. A. Ketchum and F. A. Ross.

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mate charge. * * * The certificate of the family physician is required by the life insurance company. It is affirmed to be a prerequisite to life insurance. It must, therefore, be of some value, inasmuch as the contract between the company and the applicant cannot be perfected without it. If the insurance companies consider it so essential and of such value, then, certainly, they should be willing to pay for it. But if it is valueless to the company, then it must be valuable to the applicant, in which case he should be willing to pay for it. Again, let us view the question from another standpoint—that having reference to the principles of professional obligation. The family physician's certificate is of especial importance when the family physician is in possession of some knowledge as to the past history and sanitary condition of the applicant, not easily discovered by the medical examiner. But knowledge of this kind is for the most part obtained in professional confidence, and the physician has no right to make a public disclosure of it, and no right to use it to the detriment of his patron. In such cases the position of the family physician is one of considerable embarrassment and delicacy, and more especially so if the applicant be a female. On the one hand is the inalienable respect for the truth, which every honorable man feels, profoundly urging him to make a disclosure for the benefit of a corporation, essentially commercial in its character, of knowledge gained in professional confidence. On the other hand is the unwillingness to make such knowledge a matter of public record, and an unwillingness to defeat the applicant and his patron and friend in his purpose of effecting the insurance he covets. The only escape for the honorable and conscientious physician from this dilemma is to require from the office which seeks his certificate a written expression of willingness on the part of the applicant that he should make a full disclosure of his professional knowledge. In such cases, not unfrequently, life insurance companies are saved from the risk of issuing large policies to parties whom the family physician alone knows are bad risks. Should such

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companies complain if they get this information for the trivial fee demanded for the certificate?"

Considering the ample ability of these wealthy corporations to lose this fee, rather than the physician, who dispenses a greater amount of eleemosynary services than the members of any other calling, and in view of other reasons, which will suggest themselves to your minds, the Mobile Medical Society adopted, without a dissenting voice, a resolution to the effect that they charge all life insurance companies and agencies the same fee for filling up and signing a certificate, as "family physician," to the applicant for life insurance, as is paid to the medical examiner of the company. I have brought this matter before you, not only because the same line of argument applies to many other instances in which we are called upon to furnish opinions and certificates gratuitously, and hence considerations of reason, duty, honor and an enlightened self interest seem to require some action in regard to it on our part, but also because it opens up the subject of the duties of the profession to the public, and of the obligations of the public to the profession—which brings us to the last division of our subject—

THE FUTURE.

It is a well-known fact that the medical fraternity of the State, with a few exceptions, have not shared the benefit of its rapid increase of wealth. In this respect we follow the general rule, that it seldom falls to the lot of the physician to become rich. A higher, nobler and holier motive must animate his daily life than the mere accumulation of the baubles of this world, or his profession would prove an irksome, as it frequently becomes a thankless one. "The self abnegation," to use the forcible illustration of a cotemporary,* "which led Livingston to the arid wastes of Africa, or our lamented Kane to the Arctic seas, devoting their lives cheerfully to the cause of science and humanity, are services which cannot be paid

* Richard Inglis, M. D., President Michigan State Medical Society, 1870.

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for in gold. No fee bill, no matter however high you may put it, could ever reach them." And so it is with every true physician; he spurns the very idea of accepting, *as an equivalent* for his life-saving services, the paltry legal modicum which the rich man too often takes advantage of, and which should be regarded merely in the light of a stipulation made to satisfy the conscientiousness of the man of limited ability. And yet the physician must live, like other men; and more than this, he must have time for study. For, such is the rapid advancement of our science, he cannot do justice to his patient, himself or his profession, unless he keeps posted up with its incessant progress. It is thus evident that if the entire time of the medical man is occupied in earning just enough for his daily bread he must soon fall behind the age, and become incompetent to do his whole duty. Time with him, therefore, is of more value than with any other member of the community—it is more than money—it is life—the life of his patient—the means of professional usefulness—the salvation of those who are ready to perish. The rich man, in his spacious mansion, who exacts double, nay, treble the time and attention of the physician that his poor neighbor does, reluctantly pays the same fee for a visit, and pays even this more reluctantly when told some simple truth; as, for instance, that his open window, which admits the refreshing breeze, also gives entrance to the contaminating air emanating from the congregated beings in that poor neighbor's hovel. He dreams as little of the direct personal interest he has in the health and domestic comfort of his poor neighbor (and the more secluded and shut out from the air and sun in a dark alley is this neighbor, the greater is this interest) as he does of the life-long study, the strain of brain and nerve tension, which, ranging through the boundless realms of nature, seeks, through the correlation of structure and of vital force, the acquirement of that knowledge whereby the physician is enabled to compass, in all its bearings, not only the cause of the zymotic poison, but also the counter agent to neutralize the typhoid ferment. Restored

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to health, and in the possession of the means to shield him from a repetition of the evil, the patient's estimate of the service rendered would perhaps not exceed the price of the prescription ordered from the druggist. Such ignorance, coupled with ingratitude, is not confined, however, to the rich alone; it pervades the whole community. And so general is its prevalency—so meagre is the public appreciation of the scientist—so distinctly apart from mechanical or mercantile interests is his work, and so very incomprehensible is it to outsiders, that with the multitude, when told he scarcely makes his living, he passes for a fool, and, compared with the successful spurious article, he becomes an object of pity. In fact, the physician who devotes his time to the study of his science, so far as money making is concerned, to use the phrase of a popular writer, "is behind the newsboy in the streets."

Now, this condition of things should not exist, and the question arises what is to be done? I reply, let us educate the masses—this is our work for the future.

Too long for our interest and that of our race have medical men ignored this important duty. So filled with dignity has the profession been that they could not stoop to approach the people through the main channels by which they can be reached—the daily press and public lecture room. "With dull apathy we have seen the followers of most other professions seeking to avail themselves of these elements of power, some for good, some for evil. The clergyman has not trusted alone to supernatural power in keeping alive the truths of revelation and arousing in the people a due respect for its lessons. They have watched with 'jealous care' the education of the young, and from the Sabbath school to the university they exercise the greatest control. And legislators, through their political organizations, public speeches and control of the press, hold the masses, as it were, in the hollow of their hands."*

* Michigan *University Medical Journal*, July, 1871. Review of Dr. Bartholemew's address, as President of the Medical Society of that State.

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Now, lest I should be accused of inconsistency or heterodoxy to the ethical doctrines of the National Association, which I have just been vindicating, let me, before proceeding any further, clearly define my position. I do not wish to be understood as advocating any measure in contravention of our code. When I recommend, as one of the ends for widening the usefulness of our profession, the judicious instruction of the people in the fundamental principles of medicine, I do not wish it to be understood that we are to make any selfish or improper use of such means to advertise ourselves or our cases. This, of course, would be derogatory to the character of the physician. But I propose that we should by all upright measures try to win the attention of the masses, and, by an energetic effort to spread abroad correct, intelligible ideas, enable them to judge between the true physician and the mere pretender. In the furtherance of this end, I believe the State Medical Society can and will exert a powerful influence. Such publications as your President is now uttering cannot, I think, be misconstrued—they cannot be tortured into violations of the code. If by any means they can, then let us amend our platform—add a new clause to our ethics—so that we do not prove recreant to that duty which even our very title of doctors, *teachers*, implies. No wisdom, however mature, could at once have originated a system competent to meet all the exigencies time and progress may give rise to. As our National Association advances towards the consummation of its purposes, it must be expected that new necessities will arise, and experience in the working of the plans laid out at first will demonstrate the nature of the changes for adaptation to existing circumstances. It may, therefore, become expedient, in order to carry out fully the measures I propose, to make some alterations in our organic law, and if it does so happen, I shall exert myself to the effect that they be made cautiously, wisely, and with deliberate forethought as to consequences. But I do not believe that any alteration is required in the premises.

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I believe that if, while popularizing our science, we also regulate our conduct that it shall itself be proof that we are pursuing our profession as the result of a liberal and enlightened philanthropy—that we are actuated in all our efforts by an earnest desire for the amelioration of human suffering—in fine, that we are devoted to our science for its own sake, as well as for its objective results, no exception can be taken to such action. Thus would we draw a bright line of demarcation between the physician and empiric, and demonstrate, by our actions, the difference between a profession and a trade; for, "as in the latter," says an eminent reformist,* "the art is rightfully considered as an exclusive means of gain, so the former must inevitably be degraded into a trade whenever mercenary or sordid motives supersede the scientific aim." There are many other considerations that may be adduced in support of the views just set forth, but time will only permit me to refer briefly to some of them. It has long been my confirmed opinion, and I am confident you will bear me out in the assertion, that nearly all the evils of life proceed from ignorance, intemperance and profligacy, and that the worst and most unmanageable complications of diseases may be traced to the same causes; in fact, that all or nearly all diseases result directly or indirectly from infringements of the laws of nature. Now, as the sentiment of those who have been actively engaged in contributing to the cultivation of the science of hygiene, and which has ripened into a sanitary aphorism, it has become the imperative duty of every physician to be a preacher of the gospel of life and health, if he has any exalted appreciation of the aims and ends of his calling; and inasmuch as, in the science of health, there are more exact demonstrative truths than in the science of disease, so that duty demands, as it richly deserves, an unbounded share of our professional energy. As teachers in this nobler work

* Joseph H. Green, F. R. S., London, author of "The Touchstone of Medical Reform."

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of prevention rather than of cure, we must not only show mankind what the laws of nature are, but how important is a strict adherence to them; in other words, we must, by every means in our power, by example as well as by precept, strive to advance them in the scale of intelligent beings. We must produce in them a general conviction that nature forbids that course of irregular action, and those improper habits and arrangements which obstruct the path of moral and intellectual improvement, and lead to mental and corporeal suffering. And by a simultaneous movement, we must further induce them to apply an effectual remedy, in a wiser and better distribution of their time, so as to allow a reasonable share for mental cultivation, exercise and relaxation. This doctrine may not be very palatable medicine for the idolators of Mammon—so numerous and influential in the present state of society—but if each one of us, acting in his separate sphere, testifies by his conduct that necessary business may be compressed within many hours fewer than are now dedicated to that object, and reasonable time for attendance at the lecture room as well as for amusement and recreation may thus be secured, most wholesome results would ensue. For as the bow must not always be bent, so Providence did not design that the intellect and heart of man should be continually engrossed with yearnings after wealth.

It may now be objected by the fossils, the Rip Van Winkles of our progressive science, that medical knowledge, to any degree of practical value, could not be generally imparted by such means as have just been suggested, since the public are ignorant of the technical terms necessary to be used in imparting it; and that it would be descending from our legitimate sphere to become schoolmasters. To such conservatives, if any show themselves, I would reply that when men like Herschel and Tyndal and Huxley and Liebig, and other scientists, do not hesitate to descend from their towering heights to teach the people what they ought to know, the physician should be the last to

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refuse imparting that instruction which is refunded to him in the increased capacity of the people to appreciate his worth. The public were equally if not more ignorant of the technical terms used in astronomy, microscopy, natural philosophy and chemistry, and yet we find that, through the teachings of these great benefactors of their age, they have acquired already at least sufficient knowledge of the principles upon which these sciences are based to inspire them with confidence and respect; and it is only logical to conclude that the same confidence may be inspired in scientific medicine by like methods of diffusing a knowledge of its principles. As an example of the rapidity with which valuable scientific facts are seized upon and practically applied by the people, I have only time to refer you to the numerous dietetic preparations now in use, based upon the principles of organic chemistry, and to the numbers, daily on the increase, in every community, who comprehend the necessity of nitrogenous articles of food, when repairs are to be made to the fibrous and areolar tissue, and how important an agency the carbo-hydrogens are supposed to exert, by increasing combustion, in the removal of certain morbid conditions of the lungs. We thus see how ready the people are to receive instruction. They cry aloud for it, and demand that education be made compulsory on our statute book. Shall we alone prove recreant to our duty, both to ourselves and to the people? If the people are not educated in the right direction they will be in the wrong. They are being so educated to-day by the friends of quackery, who have poisoned the public mind, even those of ministers of the gospel, editors, lawyers, judges, legislators, with the ridiculous absurdity that the regular profession are followers of allopathy; nor, with two praiseworthy exceptions, has any effort been made on the part of the profession to undeceive the public. "There is not another body of men in the world, having any care for a good name, that would keep still and allow such an indignity to be perpetrated upon it."

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Before I conclude I would specially call the attention of the society to this point, and in doing so I cannot do better than to employ the masterly argument of Dr. George A. Wood, late President of the American Medical Association—one of the exceptions referred to a moment ago—Dr. J. H. Bartholemew, President of the Michigan State Medical Society, just quoted, being the other:

"We have been called Allopathists, in contradistinction to a sect of irregular practitioners, who have taken to themselves the title of Homœpathists; the latter term signifying that its professors treat disease by influences similar in their effects to the disease itself; the former, that other and, of course, dissimilar influences are used. It must be remembered that the designation was not adopted by ourselves, but conferred upon us by Hahnemann and his followers. The intention was obvious. It was to place the regular profession and their own scheme upon a similar basis. They practiced on one principle; we on a different and somewhat opposite principle. They graciously allowed that our principle was not altogether ineffective; that we did sometimes cure our patients; but theirs was sounder in theory and more successful in practice. Now, by recognizing the name, we necessarily recognize the principle also, and thus put ourselves in a false position. In deciding between them and us, the ignorant masses think they are deciding between two systems, neither of which they understand, but of which they must judge upon the grounds of relative success. Diseases often get well of themselves, if left alone. The genuine homœpathist leaves them alone, and they often, consequently, terminate in recovery. This success is magnified by methods well understood; and multitudes are thus led astray. But we are not allopathists. The regular practice of medicine is based on no such dogma, and no exclusive dogma whatever. We profess to be intelligent men, who seek knowledge in reference to the cure of diseases wherever we can find it, and, in our search, are bound by no other limits than those of truth and honor. We should not hesitate

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to receive it from the homœpathist, had they any to offer. We would pick it up from the filthiest common sewer of quackery; for, like the diamond, it has its excellent quality that no surrounding filth defiles it, and it comes out pure and sparkling, even from the kennel. * * * *
Let us discard, therefore, the false epithet. Let us not only never employ it ourselves, but show that, when applied to us by others, it is inappropriate and offensive, and that the use of it in the future would be contrary to gentlemanly courtesy and the proprieties of cultivated society."

Gentlemen of the State Medical Society: I cannot let this opportunity pass by without indulging for a few moments in the pleasing reflections incidental to the occasion which has brought us together, and congratulating you upon the happy auspices which open with another year. Every successful undertaking imparts to the actors engaged in it its own peculiar satisfaction; and I can add nothing to the gratification each one of you must experience who have contributed to the advancement of our science and to the noble cause in which we are enlisted; but refer you individually to your own breasts for the reward which every virtuous action carries with it.

I rejoice, as a member of this society, that it has been proved to possess the elements of stability and future usefulness within itself; that it has not turned out as some who, standing still themselves, would have others do the like, vainly prognosticated, a feeble abortion, but has already obtained a local habitation and a name among the scientific institutions of our country. I rejoice yet more, as a citizen of California, to see this society rising, even in its infancy, to usefulness and reputation—destined, as I fondly trust, to become an ornament to the State, and to remove from the Pacific slope the disabilities and reproaches under which it has so long labored, of doing little toward the advancement of medical science and the diffusion of knowledge. And, although my feeble powers may not have enabled me to add anything of value to its

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archives, still the regret of this is tempered by the reflection that it is "not every arm that can bend the bow of Ulysses," but that, in lieu of higher contributions, I have brought to its service an ardent zeal, a punctual attendance and a faithful interest in its welfare. The proud consciousness of having done my duty, approved, as it has been, by the constant kindness and courtesy received at your hands—especially in being historically and honorably identified with the great medical awakening of the past year—will continue, like the evening star, to shed the scintillations of a pure, heaven-descending joy on my declining day of life.

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REPORT ON SURGERY.

By G. L. SIMMONS, M. D., of Sacramento.

The Chairman of the Committee on Surgery reports that he has endeavored to perform his duties as stated in Section 3, Article V of the Constitution of the Society. This section requires "an annual report on all important improvements in the management of surgical diseases effected in the State during the year, and, as far as can be ascertained, the number of capital operations performed, with their results." To accomplish this purpose, circulars were sent to each member of the society, but so few have responded to the invitation to co-operate in the work that no general report can be presented, and the following is offered as an imperfect substitute, with the hope that in future years the surgeons of California will respond to an invitation having for its object the most important interests connected with their profession.

In the first report of a Committee on Surgery, published in the first volume of the transactions of the California State Medical Society (1858) it is claimed "that our climate is more favorable to recovery after deep seated injuries and formidable surgical operations than most other portions of the globe." It is to be regretted that the workers in surgical practice have allowed nearly fifteen years to elapse without proving this to be true. Unless we can show by carefully compiled statistics that our rate of fatality after capital operations is less than in the older States, no amount of *assertion* will win for us believers. We, individually, know of recoveries after the most

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serious lesions, even to some of the most important cavities and organs of the human body, but to convince the world of the superior climatic influences which surround our serious cases, we must record our successes in our medical journal and incorporate them into our State reports.

ABDOMINAL SECTION.

During the past year two of our members have reported successful cases of this important operation. As early as 1852, Dr. Robert Nelson, of San Francisco, removed several tumors by this section, one of which is stated to have weighed over fifty pounds. Subsequent to this period, but little special attention was given to the subject, a few cases only being reported in a period of fourteen years. In both of the successful cases of the past year, the operations were performed in Sacramento, and Dr. Wythe, now of Santa Clara, who has given much attention to the subject, was interested in one of them as chief operator, and in the other as a consultant and assistant to Dr. Tyrrell.

There can be no doubt that this important branch of Gynæcological practice has been neglected on our coast, and it is hoped that sufferers will now be encouraged to seek relief at the hands of California operators.

TRACHEOTOMY.

I have to report three new cases of this operation, two of which were successful, and a third (in a child of sixteen months) failed, not as a result of the operation, but from the inflammation of the mouth, throat and stomach consequent upon the accidental administration of liquor potassa, and for which the opening into the trachea was made. During my experience in this valley, I have been interested in eight cases of tracheotomy, all of which have terminated successfully, with two exceptions, one of these being the case of the burn just stated, and the other that of a boy aged eight years,

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where the opening into the trachea was made so late that strength was wanting to expel the croupal deposits, and the deadly asphyxia continued.

In no one of the cases was an attempt made to perform the operation until all remedies had failed and death from suffocation seemed to be imminent. To change the scene of a lovely child dying of croup, where little hands are extended for aid from agonizing asphyxia, for the perfect calmness of unobstructed respiration, is a triumph for which we may seek an equal in the whole range of surgical practice.

It is a source of surprise to me that this operation is not oftener insisted upon, even for temporary relief from trachael obstruction, for not only is the little sufferer relieved from the urgent symptoms, but time is gained for the administration of supporting remedies. I fully agree with Aitken, who says "the evidence is daily accumulating which shows that tracheotomy ought to be resorted to much oftener as a remedy for croup than it has hitherto been, and that at a much earlier period in the disease—not as a last resource when death from asphyxia appears imminent, and after treatment of a depressing kind." There are three points in connection with this operation which I wish to mention:

First—The dissection (where practicable) should be carried on slowly to the rings of the trachea, and all hemorrhage arrested before an opening is made.

Second—The opening into the trachea should be held apart by the elliptical dilating instrument of Stout until the greater portion of the obstructing membranes are expelled, and before any attempt is made to introduce a tracheotomy tube.

Third—Pure glycerine should be used freely between the tubes (outer and inner), and also by a delicate probang into the trachea itself. In this connection glycerine not only prevents the membranes and deposits from adhering to the metallic tubes, but within the trachea acts as a solvent and disinfectant.

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TREATMENT OF FRACTURES OF THE FEMUR ON AN INCLINED PLANE AND BY CONTINUOUS EXTENSION.

In the *Pacific Medical and Surgical Journal* for July, 1870, I reported a simple plan for treating fractures of the femur on an inclined plane, which seemed to combine the best ideas of modern surgeons, and to give the greatest ease to the patient during a necessarily long confinement. The results of the continued use of substantially the same apparatus for a period of fifteen years have been so uniformly satisfactory that I desire to incorporate the article in this report, and to further commend the plan to all who wish to combine ease and simplicity with good results in the management of these grave injuries.

It is a fact that many of our general practitioners do not seem to be aware that the beautiful and somewhat complicated apparatuses of Gibson, Boyer, Amesbury, Flagg, Welch and others, for fractures of the thigh, have ceased to be attractive to most modern surgeons, and that in the language of the Pennsylvania Hospital Report for 1870, "they are things of the past and have become matters of history. The simple method, moreover, commends itself by the fact that the appliances, with the exception of adhesive plaster, are to be found in nearly every household. The surgeon need not encumber himself with patent splints or seek the services of a skilled mechanic to aid him in the manufacture of a side rail or foot piece.

As the tendency of modern surgical teachings is toward the use of simpler apparatus, so our duty compels us not only to endeavor to accomplish the best results possible, but to keep in view the comfort of our patients, and to select such dressings as will render their daily life free from continued suffering. When Crosby, of New Hampshire, introduced the use of adhesive plaster in extension, no great improvement had been manifest in the treatment of fractures of the femur from the time of DESAULT. All straight splints, when applied in cases of oblique fracture, were open to the objection of producing

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excoriations and ulcerations about the foot or perineum. The use of adhesive plaster rendered it at once possible to treat these cases by powerful extension apparatus without injury to foot or ankle, but there still remained the same objection to the counter extension bands or crutch heads in the perineum. In the old position, with the patient in a horizontal posture, there is a constant tendency of the upper fragment to override the lower. Prof. Smith says that "the patient in the straight apparatus has a constant tendency to slide towards the foot of the bed, and thus the trunk forces the upper fragment of bone upon the lower, overlapping occurs, and an angular position follows." This he "is satisfied, from the most careful observation, is a much more fruitful source of shortening and deformity than is the contraction of the muscles, so constantly referred to."

Velpeau, after experimenting for many years with the various forms of straight splints, came to the conclusion that stiffness, excoriations, and ulcerations are attendant upon these particular apparatuses, and in his last lectures "the old king of surgeons" advocated the following simple plan: "Leave the patient upon his back with the thigh extended; a round towel embraces the ischium, and is fixed at the head of the bed for counter-extension; a stirrup bandage at the level of the malleoli allows the fixing of two tapes attached to the foot of the bed for extension."

In our own country, the efforts of Davis and Buck, of New York, to introduce the plan of continuous extension by weight in this fracture have been generally recognized, and our recent hospital reports are full of expressions in favor of simpler dressings and continuous extension.

In the Pennsylvania Hospital report, for last year, we find the following; "No greater improvement has been introduced into the treatment of fractures than the plan of treating those of the shaft of the femur by continuous extension with a weight; such uniform good results were never attained by screws, gaiters, perineal bands or splints." A prominent

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surgeon, connected with the same institution, says: "The apparatus of Desault, with its numerous modifications by modern surgeons, has taken its place on the shelf as a thing of the past, and has become a matter of history." Most of the evils associated with the use of the straight splint were so apparent to Gibson, of Philadelphia, that many years ago he introduced into his Surgery a diagram of a bedstead, with an incline from the foot to the pelvis, extension being kept up by a gaiter attached to the foot-board, and lateral displacement prevented by upright pegs. This mode, he says, he has found to be adapted to peculiar forms of injury; and it occurred to him from knowing how many people in health are in the habit of elevating their lower extremities as high as they can conveniently get them, in order to relax the muscles. In this contrivance he claims a combination of flexion and extension, the thighs being bent upon the pelvis, and the legs extended upon the thighs.

After witnessing some unpleasant results with different kinds of counter extension apparatus in the treatment of oblique fractures of the femur, I adopted the idea from Gibson of a single inclined plane bed, with a solid bottom (perforated for a trap, if desirable), but instead of stopping the incline at the ischium, as in his cases, I continued it to the head of the bed, in order that the whole weight of the body might be instrumental in the work of counter extension. To the whole length of the side of this inclined bedstead, I attached a cushioned rail from four to six inches wide, and placed just above the level of a hair mattress, and to its foot a piece, perforated in two places, for the extension bands, so as to be able to carry into practice the ideas of extension by weight and adhesive plaster. This combination I used when in charge of the Sacramento County Hospital in 1858. It may be said to combine some of the ideas of Gibson in regard to position; those of Desault in relation to the necessity of keeping the leg, thigh and pelvis as a whole, and those of modern surgeons in regard to continuous extension. With

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such an apparatus, simple and easily constructed, I have seen treated many cases of fracture of the femur with as good results as are possible with any of the more complicated aparatuses, and certainly with greater comfort to the patients. I believe it to combine principles which are essential and easily comprehended, and to perfectly meet the following indications, as laid down by one of the masters of our art.

First—It keeps the pelvis and upper fragment back.

Second—It keeps downward the lower end of the fracture.

Third—It makes some resistance to a rotary motion of the limb.

Without the side rail it nearly resembles the dressing followed by Flint, of Louisville, Ky., and other surgeons at the East. The patient is first laid upon the inclined bed and the bone set, adhesive strips applied to the side of the leg, and extension kept up in the usual manner by an assistant; then a light roller is used, with a moderate degree of pressure, from the toes to the groin, care being taken to pad well around the joints as the bandage is carried upward; a perineal band, formed of paper and cloth, or stout adhesive plaster, is then applied and fastened at a desirable obliquity to the side rail, care being taken that it is secured high enough to prevent it from passing across the upper fragment of the femur, to force it outward. This perineal band is used here, *not* for the purposes of counter extension, but to keep the pelvis steadily against the side rail, and thus to assist in preventing motion of the body outward or inward. After fastening this band, the adhesive strips for extension are passed through the perforations of the foot piece, the assistant gives way and the weight is tied on for continuous extension. I have, in some cases, omitted the perforated foot piece and carried the extension bands directly over a smooth, rounded surface or piece of polished wire. I think, however, it is better to carry the adhesive strips through the openings in a foot piece, for the reason that in this way they aid somewhat in preventing rotation of the limb and also prevent any lateral pressure upon

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the sole of the foot. For the extension weight, I prefer a bag of shot, it being convenient to add to or take from the original quantity.

In connection with the perineal band and strips at the foot for extension, no other attachments to the side rail are found to be necessary to maintain the fragments in line, or to prevent sudden motion. The limb in its length thus being to some extent free, allows full action to the extension weight, and no amount of side straps are present to force the broken fragments into the soft parts, and to produce pain and irritation. The point of injury can also be readily examined without interfering with the main dressings.

A first view of a patient in the inclined position suggests the idea of discomfort. In practice, however, patients have not complained, and it is easy to raise the head alone on a pillow to a more natural position. The elevation of the injured limb is so well calculated to subdue local congestions and relieve suffering, that no complaints are made of the situation of the body.

In conclusion, I quote from Velpeau in regard to his simple method:

"Lameness, gentlemen, is often occasioned by beautiful apparatuses and complicated bandages, which bring about sloughs or swellings from the restraint of the neighboring articulations. With my simple apparatus, easily comprehended and applied, easy to find and to fabricate, you obtain a cure with a slight degree of shortening, and not fatiguing to the patient. You see, then, how simple the treatment of this fracture may be, and how urgent it is to disembarrass ourselves of all that gear which is so tedious for the surgeon to apply, so painful for the patient to bear, and so profitless to every body."

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INCLINED PLANE BED, WITH SIDE RAIL, FOR TREATMENT OF FRACTURED THIGH.

LIGATION OF THE LEFT COMMON CAROTID ARTERY—DISSECTION SEVEN YEARS AFTERWARDS—SOFTENING OF THE BRAIN.

In the *Pacific Medical and Surgical Journal*, for January, 1864, I reported a successful case of ligation of the left com-

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mon carotid artery, performed in the presence of Drs. G. Taylor and G. J. Phelan. In August, 1870—nearly seven years after the operation—I had an opportunity of making a dissection of the body.

As most of the examinations of the brain, following a ligation of this vessel, have been made at a limited period of time after the operation, I have thought the case and subject an interesting one to present to the society, more particularly as it adds one to the number of those who have undoubtedly suffered from chronic cerebral softening as a result of ligation of the main carotid.

In 1847, Virchow published his observations relative to partial cerebral anæmia produced by occlusion of an artery, and subsequently many authorities recognized the fact.

In the report of the Committee on Surgery, published in the first volume of the transactions of the American Medical Association, occurs the following:

"Within a year or two past, attention has been in a particular manner directed to derangement of the cerebral functions following ligature of the common carotid artery. These cerebral symptoms are attributable either to cutting off the direct supply of blood to the brain, or to disease consequent upon the altered condition of the circulation in that organ. Nearly one-fifth of the recorded cases of the operation in question are found to have exhibited it in a greater or less degree, and the frequency of its occurrence has been singularly overlooked by practical surgeons."

Erichsen says: "Besides the ordinary accidents which follow the application of a ligature of the carotid, the operation occasionally gives rise to serious and fatal disturbances of the circulation within the cranium." Dr. Norris (American tables), referred to by Erichsen, report one hundred and forty-nine instances of carotid ligation; of these, thirty-two were fatal, eighteen of the fatal cases resulting from cerebral disease.

Gross mentions "that very serious cerebral symptoms occasionally follow the ligation of the carotid artery, and are

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among the principal sources of mortality from the operation. Their full importance, however, not being recognized until Mr. Chevers of London published his researches." There is no uniformity, either in the character or in the manifestations of the cerebral symptons. Sometimes they come on immediately after the deligation of the vessel, while at other times, and perhaps most generally, they do not appear until the end of days, weeks or months. Occasionally their access is so gradual and imperceptible as to keep the patient in ignorance until it is discovered accidentally. He refers to the New York cases reported by Wood. In thirty-nine operations, there was a loss of six; softening of the brain occurring in two of the fatal cases.

In the last edition of Holmes' Surgery, under the caption of "Ligature of the Common Carotid," Holmes, of St. George's Hospital, states that one of the chief causes of death is gangrene, showing itself principally in the form of softening of the brain. The gangrene never affects the external parts of the head and neck. Why the brain suffers is explained by the fact that this organ is more in want of a constant and equable supply, and to tolerate badly the withdrawal, for even a short space, of so large a quantity of blood as is brought to it by this great artery. Not only have prominent surgeons recognized this fact, but our latest medical authorities support their opinions.

J. Hughes Bennett says that a softening of the brain may occur as a consequence of obstruction of arteries, independent of exudation or hemorrhage. In such cases, the vessels are not coated necessarily with granular exudation, but the nerve cells undergo the fatty degeneration and are enlarged, the walls of many being dissolved, leaving crescentic granular masses between the nerve tubes. This alteration is accompanied with diminution of the cerebral density, and the tubes are easily broken up and separated. In no recent work, however, within my reach, is this subject so plainly reviewed as in Niemeyer's late Work on Practice. As his views so clearly

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illustrate our subject, I will quote from his article on anæmia of the brain: "For a time the possibility of anæmia of the brain was denied, just as that of hyperæmia, and on the samé grounds. We have called attention to the errors in these conclusions, and shall only mention that, independently of the numerous autopsies where the brain has been found anæmic, Donders, Kussmaul and Tenner have observed excessive anæmia through an opening (covered by a glass plate) in the skulls of living animals. Among the causes of this disease, he gives compression or obstruction of the arteries supplying the brain. In almost all of the cases of this class that have been reported, the obstruction was artificially caused by ligation of the carotid. In a few cases only, the carotid or vertebral arteries were compressed by tumors or closed by emboli. He says: "Since it is not merely the presence of blood in the vessels of the brain, but the supply of oxygenated arterial blood that is indispensable for the normal functions of the organ, it is evident that, even where the absolute amount of blood in the brain is not diminished, but where its circulation and distribution are changed so that only a small amount of blood enters through the arteries and but little escapes through the veins, the same symptoms must arise as in true anæmia. In this affection, the substance of the brain is found to be discolored, and the gray substance appears paler and more resembles the white; the latter is milky and shining. On section, few if any blood points are seen on the cut surface. The vessels of the cerebral membranes are empty and collapsed.

The symptoms of anæmia of the brain, that comes on suddenly and quickly attains a high grade, differ from those which appear slowly and are less severe. In the former case, the patients become dizzy—everything appears dark before them, they become insensible to impressions and incapable of movement, their pupils dilate, their respiration becomes slow and they lose consciousness; they sink to the ground, usually, with slight spasms. In most cases the patients come out of

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the fit in a short time; in other cases the swoon ends in death. In anæmia of the brain that comes on slowly, just as the hyperæmia, at first there are usually symptoms of irritation, subsequently those of paralysis. To explain this correspondence, the hypothesis has been advanced that a certain tension of the molecules of the brain is necessary for its normal activity, and that an increase or diminution of this tension by too great or too slight a fullness of the vessels modifies the excitability of the brain in the same way. It is a physiological fact that the excitability of a nerve is increased a short time before it is entirely lost, and that the greatly increased excitability of a nerve is not a sign of increased normal nutrition, but on the contrary of its diminution.

Partial anæmia of the brain, which results in many cases of thromboses and embolism of the cerebral arteries, has an evident pathogeny. This form of softening is analogous to the gangrene of the extremities induced by closure of the vessels. In both cases, death of the tissue is due to the obstruction of the supply of nutritive material, but the necrosed parts within the skull, not being exposed to the action of the atmosphere, are rarely decomposed. This only happens when the emboli that has stopped the vessel comes from a suppurative spot, and transfers with it a tendency to suppuration. Closure of a vessel induces necrosis more readily the later and more incompletely a collateral circulation is established.

It is remarkable that emboli are almost always found in the left arteria fossæ Sylvii. Perhaps this is because the left carotid artery leaves the arch of the aorta almost in the direction of the current of blood, while the innominate forms a considerable angle with it. The necrosis resulting from obstruction of the vessels and insufficient development of the collateral circulation induces relaxation and softening of the brain substance, hence necroses caused by anæmia are designated by a peculiar form of softening of the brain as "simple or yellow softening." Corresponding to the most frequent and obstinate obstruction of the vessels, the softening is usu-

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ally in the greater hemispheres, and chiefly in their medullary substance. It varies in size from a bean to an egg. The grade of the softening differs; in the highest grade the cerebral substance at the point of necrosis is found changed to a moist, gelatinous, trembling pulp. The color of the softened point is sometimes white, sometimes more yellow."

In the Sydenham Society's publications for 1867 we find a notice of some more recent observations on the subject of cerebral softening, by Messrs. Prevost, Cotard, Proust and La Borde, in France. These gentlemen, by an extended series of experiments, which interfered abruptly with the cerebral functions, were able to observe the whole phenomena of softening of the brain as it is induced by obstructions of the nature of ligation of the vessels or emboli. They say: "We have established that a manifest congestion is always produced in the parts to which the obliterated artery is distributed, and that this hyperæmia which people have argued inflammatory, must be conceded to be of quite a different nature. The examination of the rectal temperature enables us to say that the heat of the body is not raised in softenings as in inflammations." Proust says: "The essence of softening is the alteration in the nerve tubes of the brain, and the molecular death is due to interference with the nutritive current of the blood."

Solier, quoted by Hammond, thinks this condition is always a necrobiosis produced by the cessation of the physiological action of the blood, as occlusion, not of the nature of inflammation, but a congestion which is necessarily the first stage of softening. Hammond himself believes that cerebral softening may be caused either by anæmia or inflammation.

CASE.

In October, 1863, W. H. G., a Scotchman, aged forty-one years, of good constitution but of dissipated habits, in a fit of drunken bravado ordered a boon companion, who was brandishing a loaded revolver, to "shoot him in the mouth." In

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accordance with the order, the weapon, a large sized navy revolver, was placed near the lips and fired. The ball entered near the left free margin of the lip, tore through the inner tissues of the cheek, and made its exit just behind the angle of the jaw. A physician who saw the case soon afterwards, plugged the wound with lint saturated with Monsel's salt, and the case was removed to the County Hospital, then in charge of Dr. Phelan. The usual measures to promote healthy action in the wound were at once adopted, and for a week the patient appeared to be doing well, when one night a most alarming secondary hemorrhage occurred, and before the Doctor could reach the Hospital, the man was fainting and in danger of death from excessive bleeding. Pressure over the wound and subclavian artery stayed the hemorrhage, and Dr. G. Taylor and myself saw the case, in consultation with Dr. Phelan. The soft tissues in the neighborhood of the wound were found to be so implicated in the injury that it seemed to be impossible to reach the direct source of the bleeding, which evidently proceeded from some branch of the internal maxillary artery, and it was therefore deemed safest to ligate the main carotid. Upon the invitation of Dr. Phelan, and assisted by himself and Dr. Taylor, I proceeded to operate in the manner laid down by our surgical authorities. The artery was secured without any particular difficulty, except from the overlapping of the jugular vein. The ligature came away in the usual time; the wound filled in rapidly, and he was soon afterwards discharged cured.

After the ligation of a large artery in its continuity, it will be remembered that the modes in which new vascular connections form vary greatly. According to Bilroth, who quotes the experiments of Porta, the collateral circulation is maintained.

First—"There are strongly developed vessels which pass from the central end of the artery directly to the peripheral end. These uniting vessels are chiefly the dilated "*vaso vasorum*" and the vessels of the thrombus. It might happen that

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one of these uniting vessels should dilate so much as to acquire the appearance of being simply the trunk regenerated.

Second—There is an indirect collateral circulation—*i. e.*, the connecting branches of the next lateral arteries are greatly dilated. (See plate from Bilroth, page 110.) After ligation of the common carotid, however, the brain is supplied, not as would be supposed, from the vessel of the opposite side of equal caliber, but from branches of the sub-clavian on the same side as the inferior thyroid and vertebral.

For nearly seven years this man remained in and about our city, rarely pursuing any regular vocation, but relying upon chance jobs at fishing and assisting at the bridge for his support. During this time he enlisted as a soldier, but was soon afterwards discharged for some unascertained cause.

While living about the bridge, he was frequently thought to be under the influence of liquor, but has been known to refuse spirits when tendered to him. At times he would stagger in his gait and talk in a thick and incoherent manner. On two occasions he reappeared at the Hospital and sought advice for slight difficulties accompanied by headache and dizziness. During the last year of his life, he was subject to falling fits, which generally commenced with slight convulsions of a general nature. After the short convulsive effort, he would remain in a kind of stupor for hours. These seizures were liable to occur at any time or place, and he has been in danger of falling into the river when attacked upon the sidewalk of the bridge. At these times his neighbors would generally place him in some safe location, and allow him, as was supposed, to sleep off a drunk. After these attacks, he became cross and irritable, easily excited and prone to quarrels. In August, 1870, while in a saloon on the Yolo side, he created a disturbance and advanced upon the proprietor in a threatening manner. His advances were met by the keeper's raising a chair and striking him a sliding blow. He immediately walked over the bridge, and at its Sacramento end was seized with a slight convulsion which terminated in

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the usual stupor. He was then removed to the station-house for the night, and on the following day to the County Hospital, where he expired within twenty-four hours. He showed no signs of consciousness from the time he was seized with the convulsion until death. It being supposed that death had resulted from a fracture of the skull, the Coroner was notified and the proprietor of the saloon arrested for manslaughter.

Fifteen hours after death, I made a post mortem examination of the body in company with Drs. Donaldson of the Hospital and F. W. Hatch. As an opportunity to make an autopsy seven years after the ligation of the carotid does not often occur, we resolved to inject the main vessels of the neck and head, and by this we were able to trace the collateral circulation, which was found to be freely established through the vertebral and inferior thyroid of the same side. The body was well nourished and had upon it two ecchymosed spots of limited extent, one upon the right arm near the insertion of the deltoid muscle, and the other upon the right temporal region. Beneath the temporal injury there were no deep seated evidences of a serious blow, and the effects appeared only in the tissues exterior to the skull.

On removing the calvarium, the membranes of the arachnoid were found to be moist, and on attempting to slice the upper portions of the hemispheres the gray substance was found to be unusually pale, more nearly resembling the white, and the parenchyma of the left anterior lobe for the size, of a large egg, so gelatinous and pulpy that a stream of water would easily wash it away. The smaller branches of the interior branch of the middle cerebral artery had given away under the pressure of the post mortem injection, and in a few places in the neighborhood and through the softened portion, appeared little masses of the hardened injection.

Such a complete disorganization of the greater portion of the anterior lobe had rarely been seen by those in attendance. There were no evidences of acute disease about the brain or its membranes.

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EXCISIONAL SURGERY.

Several interesting cases of excision of the joints have occurred to our members during the past year. In midsummer I was invited by Dr. Donaldson, of the Sacramento County Hospital, to take charge of a case of a New Mexican boy. The patient (aged twenty years) was found to have suffered for eight years from scrofulous synovitis; numerous sinuses existed, which led to diseased bone, and the apparent hectic and failing constitutional powers pointed to a serious termination at no distant day. The boy was very anxious to try an operation for relief (before having amputation performed) which would promise a chance of success, and soon afterwards, in the presence of Drs. Donaldson, Hatch, Nixon and Cluness, I opened the joint by an H incision. Both the upper ends of the tibia and the lower end of the femur were found badly diseased and over an inch was sawed from the latter, and half an inch from the former bones; the sawn surfaces were then firmly wired together and the limb dressed upon an anterior splint and suspended. The after treatment was conducted upon the general principles of support to the system, perfect rest to the limb and carbolized injections into the wound wherever an opening could be found. The patient fully recovered; the joint is firmly ankylosed, and he walks with ease and confidence. By having an extra heel to his shoe, the deformity is hardly apparent. The case is commended to the notice of those surgeons who prefer amputation to excision in all cases.

CASE OF EXCISION AT THE SHOULDER JOINT.

BY F. W. HATCH, M. D., of Sacramento.

January 4th, 1871, A. L. G., while on a hunting excursion, fell from his wagon, and the gun which he held in his hand being discharged, received a gun-shot wound of the right shoulder; the charge (No. 2 shot) entering at the posterior

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inferior margin of the axilla, passing upwards and anteriorly, and making a counter opening above the clavicle, about one inch from its attachment to the acromium process of the scapula. It was evident upon examination that violent injury had been inflicted upon the structures surrounding the joint, and that the humerus, scapula and clavicle had been fractured. It being then late in the day, and there being considerable constitutional disturbance consequent upon the accident, it was determined, after consultation with Drs. Cluness and Simmons, to defer active interference until the following morning. The question being one of selection between amputation at the shoulder joint and excision, it was determined, after consultation, to try the latter; the patient himself being moreover earnest in his solicitation to save the arm if possible. Accordingly, assisted by Drs. Simmons, Cluness and T. B. Hatch, I made a U shaped incision, involving the deltoid muscle, and the flaps being raised, exposed the injured tissues beneath. The contusion and laceration of the soft parts around the joint were extensive. The charge had entered at the point of the axilla above mentioned and, passing through the head of the humerus, had emerged through the clavicle, about one inch from the acromial attachment. The head of the humerus was shattered into a number of fragments and the shaft splintered down to the insertion of the deltoid. A portion of the latter—the humeral shaft—about one inch and a half in length, separated from its connections, had been driven under the pectoral muscles and lodged beneath the clavicle upon the first rib, whence it was with some difficulty extracted. The acromium process, together with a portion of the spine of the scapula, was ascertained to have been fractured. After clearing away, as far as practicable, the powder, shot, gun-wadding and fragments of cloth which had been forced in by the explosion, the shaft of the humerus was excised at the insertion of the deltoid, this being considered the limit of the injury to the bone. The broken and disconnected pieces of the head of the humerus and of the scapula

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were removed, the wound cleansed and the flap brought down and maintained lightly in position. During the operation, the posterior circumflex artery was wounded and reguired a ligature. Water dressings were directed to be applied, and morph. sulph., gr. ⅓, administered; also, ordered whisky to be given until full reaction should take place. P. M.—There is some reaction, but the condition of the patient is not satisfactory; has taken whisky occasionally and two-thirds of a grain of morphine; ordered morph, sulph., gr. ⅓, to be repeated every five hours if required, and egg-nog and concentrated beef tea to be supplied freely.

6th.—Improved reaction. The bladder not having acted since the operation, it was relieved by the catheter. Ordered turpentine and castor oil to be given, and the dressing of the wound to be kept moistened by carbolic acid lotion. P. M.—The oil has acted well; urine evacuated naturally; as the egg-nog disagrees with the stomach, order brandy toddy to be given liberally; morph. sulph. to be continued.

7th—The condition of the patient seems favorable; the pulse has increased in firmness, and his spirits have revived. Removed dressings; commencing gangrene observed in the lower border of the deltoid flap, to which carbolized oil was applied and the same injected underneath the edge of the flap, and from above through the wound near the clavicle. P. M.—The carbolized oil again injected as in the morning, and its repetition directed at midnight. Suppuration scanty; ordered quin. sulph. gr. iij, in combination with elix. calisaya, every four hours.

8th.—Passed a comfortable night; general condition good; gangrene gradually extending up the flap; cannot retain the quinia or the toddy, but has substituted port wine for the latter, which he has used freely. Repeated the injection of the carbolized oil and applied a poultice of charcoal, with which the carbolized oil was freely intermixed. Continued stimulants and quinia in the same doses, in pills.

Jan. 14th—Slough all separated, involving about one-third

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of the flap. The wound is granulating favorably. The end of the humerus exhibits an unhealthy appearance for about one-half an inch. In all other respects the patient is doing well. The ligature parted to-day, and the remnant of the flap was brought down by adhesive straps. Carbolic oil injections and dressings continued.

22d—Patient cheerful; appetite good; strength improving; flap uniting above; wound looks healthy; the indications are that the end of the humerus will exfoliate.

23d—Was summoned early in the morning and found him bleeding from the wound; has lost probably five ounces. As the hemorrhage soon ceased upon the application of cold water, the wound was dressed as before.

24th—Still bleeding a little, but patient does not feel the loss of blood. Dressed wound and gave tinct. ferri. chlor. gtt. xxx every five hours.

25th, A. M.—No change. P. M.—Bleeding came on for a short time quite freely, arterial in character, but ceased before my arrival with Drs. Cluness and Simmons, whom I had requested to visit the patient with me. Shows the loss of blood in pulse and countenance. As the hemorrhage had ceased, it was deemed inadvisable to interfere.

26th—As there is still some bleeding, raised the flap to get at the bottom of the wound. No bleeding vessel could be discovered; hemorrhage seems to proceed from around the end of the humerus. This was ascertained to be dead for half an inch anteriorly, but granulating posteriorly, except at the lower edge which was thinned down to a sharp, cutting surface, and was supposed to be the cause of the hemorrhage. Smoothed the edge of the bone with forceps. Posteriorly, between the skin and the scapula, in the infra-spinous-fossa, a "pocket" was found, filled with clots of blood. These were removed and a drainage tube inserted, extending to the angle of the scapula. The whole was filled with lint, saturated with carbolized oil.

28th—No further bleeding. Pus is secreted freely from the

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entire wound. Drainage tube removed, and injection of the carb. oil used. Dressed wound as before; continued iron and stimulants.

February 1st—Doing well; slight tumefaction as from secondary abscess over the lower end of the humerus, near the elbow.

3d—Opened abscess, which was small and unimportant.

March 8th—Had a decided chill to-day, followed by fever and sweating. Quin. gr. iv., every two hours for four doses. Repeat daily.

March 28th—Shell of bone, half an inch in width and extending more than half the circumference of the humerus, removed to-day. Healthy granulations beneath. The discharge having nearly ceased, the flap was again brought down firmly by adhesive straps, resulting in perfect union of the surfaces.

Since this date, Mr. G. has been in the habit of visiting me from time to time at my office. He has been slowly improving in the use of his arm, with the prospect of eventually making it a useful and tolerably efficient member. About the middle of July, I saw him for the last time. He was able to use his hand in writing, imperfectly as yet, it is true, but with perceptibly increasing facility. He left the next day, on horseback, for Montana, a distance of some three hundred miles.

Dr. Oatman, of Sacramento, reports a case of excision of the knee joint, in the *Pacific Medical and Surgical Journal* for July, 1869, which, although finally terminating in amputation, has some very instructive points in connection with the subject of ankylosis after operations at the joints. The following is a brief synopsis of the doctor's valuable paper:

C. G——, a lad of sixteen years of age, was wounded on the 10th of March, by a charge of No. 6 shot and newspaper wadding, in the left leg at the knee, making an opening through the skin, carrying away most of the head of fibula and ranging towards the centre of the limb, without egress.

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Extensive suppuration about the joint soon followed, and at intervals fragments of wadding, clothing, shot, etc., were removed. The constitutional symptoms soon became serious, and as amputation was positively forbidden, the operation of excision was performed, ten weeks from the reception of the injury. The charge of shot was found to have carried away the head of the fibula, the outer wall of the head of the tibia, which with wadding, etc., lie loosely in the center of the head of the tibia, in the space formerly occupied by the cancelli. After removing large pieces from the femur and tibia, these bones were wired together, and the case treated upon the most approved general principles without success. Numerous abscesses formed about the knee, and new portions of denuded and carious bone could be felt with a probe soon afterwards. Early in October, there were symptoms of pyæmia, and a general anasarca followed. On the 15th, the limb was amputated at the middle third of the thigh, with a small prospect of success. Gangrene of the stump supervened, which was treated externally by carbolic acid and the patient finally recovered with a fair stump.

After the amputation, the diseased joint was macerated by Dr. Oatman, and the specimen exhibited to the members of the Sacramento Society for Medical Improvement. The important points in the case, as given by the author of the report, are the following:

"The singular lodgment of shot, wadding and fragments of bone within the head of the tibia; the firm bony union, after excision, between the sawed ends of the femur and tibia, and yet the carious and softened state of the bones, which rendered amputation necessary; and the efficacy of carbolic acid in arresting gangrene of the stump."

GUN-SHOT WOUND OF THE LIVER.

Dr. W. E. Whitehead, of the U. S. A., reports in the September number of the *Pacific Medical and Surgical Journal* for 1870, a case of gun-shot wound of the liver, occurring in

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a sailor twenty-two years of age. A pistol slug weighing eighty-two grains entered three and three-fourth inches posteriorly from a line drawn from the nipple of the right side to the superior spinous process of the right ilium, and five and three-fourth inches below and posterior to the right breast. The slug was removed two and a half inches from the median line, and three and a half inches below the left nipple.

The patient bled very freely when first shot, and vomited every two hours from Monday till Friday night. Bile flowed freely from the entrance of the wound for forty days. On the day following the injury, he exhibited the following symptoms: Difficult breathing; slight spasm of the diaphragm: pale and much prostrated; pulse small and one hundred and twenty; tongue coated and skin yellowish. The case was first treated by small doses of morphia, calomel and Dover's powder. Five days after the accident, the first stool was observed to be clay colored. Bile gradually reappeared in the evacuations, and the patient is now stated to be in better health than before he was shot, and suffering no inconvenience from the severe injury received.

Dr. Clinton Cushing, of Oakland, reported at the July, 1870, meeting of the Alameda County Medical Association, two cases of hip disease occurring in children, aged, respectively, five and three years, which were successfully treated without an operation.

The chief points to which he called attention are the following:

First—That perfect rest, as near as possible, is of the first importance in the treatment of hip disease, at whatever stage.

Second—That the best way to secure this is by moderate extension by the weight and pulley.

Third—That by this means the opposing diseased surfaces are kept asunder, and by the same means the patient is allowed to move about in the bed quite freely without aggravating the disease in the joint. He further says: "it is surprising to see how well children will bear confinement to bed in the manner

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indicated, and how readily they accept the situation when free from pain." He thinks a tonic course of treatment is demanded at whatever stage, and is a firm believer in the virtues of counter irritation in this disease, thoroughly applied.

Dr. E. B. Harris, of North San Juan, California, who has had much experience as an army surgeon during our civil war, sends the following cases:

THE EFFECTS OF CARBOLIC ACID IN THE TREATMENT OF INJURIES OF THE BRAIN.

BY E. B. HARRIS, M. D., of North San Juan.

On the 11th of July last, I was called to Relief Hill, Nevada county, to see Mr. Dyer—a distance of some twenty miles. His age, forty years; laborer; strong, athletic man; full habit, sanguine temperament, temperate habits, etc. I found the man under the following circumstances, some six hours after the injury: He was partially conscious; stertorous and laborious respiration; surface bathed in cold, clammy sweat; pulse, sixty-four per minute and feeble, with hemorrhage from a wound received in the head, involving the right parietal and a portion of the temporal bones. Up to this time the man had lost considerable blood. From a gentleman present, I learned the following particulars:

About six hours previous, while at work in a mining claim near a heavy embankment, he was struck by a stone on the head which felled him senseless. The man was conveyed to his boarding-house, nearly one mile, where I found him as stated.

He partially recovered from the first complete insensibility soon after the injury. On examining the injury, I found a clean cut two inches in length over the right parietal bone, running parallel with and two inches below the sagital suture. I removed the cloths and coagulum, and the bleeding became very profuse. Finding the fracture extensive, with depression, and unable to elevate, I laid bare the skull (preserving the periosteum as much as possible), and resorted to the

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trephine. The fracture included a portion of the skull driven down through the membranes into the brain, lacerating considerably. At *first* it was difficult to find a *solid foundation* for the trephine, and to obtain it, I continued the dissection to the upper flap by means of another incision. On removing the chip, hemorrhage was very profuse for a few moments, and consciousness returned, at which point I administered chloroform and ether and completed the operation. I removed several pieces of bone, and found one piece driven down into the brain, lacerating the membranes and some of the convolutions of the brain. I found the hemorrhage to come from the meningeal artery, which was readily checked by slight contortion and the application of a strong solution of carbolic acid, which was kept up for some twenty minutes. I succeeded in replacing the fractured skull to its normal condition, removed the lacerated portions of the dura mater, and closed the wound with stitches about one inch apart. A solution of carbolic acid and water (one of the former to twenty of the latter) was injected *into* the wound so as to carry the solution to every part of the injury, and continued every few moments for about one hour; after which, I ordered compresses wet with the acid and water, one to thirty, applied to the head, and the patient placed in bed. I was obliged to be absent for twenty-four hours, and ordered the following: Sulphate magnesia, 2 oz.; antimony et pot. tart., 2 grains; water, half a pint. Dose, a table spoonful every four hours till the bowels should be moved. Left directions to give a Dover's powder if required to promote rest.

On the following day saw patient and found him in a very favorable condition. Pulse 65; respiration 16; no fever; passed a comfortable night; no headache; no swelling of parts. Continued the applications to the head; ordered chicken broths simply.

I visited the patient daily till the fourth day, when I removed the stitches; and up to this time there was no dis-

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charge, until after the first twenty-four hours, and no bleeding after the first dressing.

On the 20th, visited patient; found him rapidly improving; and up to this time there had been no delirium or cerebral disturbance of any character. I will mention that I kept the pulse at 65 and 70 per minute, by the occasional use of veratrum viridi.

On the 23d day of the month, the patient was considered free from any danger, and was accordingly discharged from any further surgical treatment. There was discharge of pus from the wound.

This case is reported (and explains several others of like character) in order to show the effects of carbolic acid in the treatment of injuries of the brain, which the author has found as applicable and effectual in the latter character of cases as in the muscular tissue; and without entering into any discussion of the therapeutical effects of the remedy in the treatment, suffice it to say, that from observations in civil and military surgery, I have never seen extensive suppuration supervene upon the application of carbolic acid.

CARBOLIC ACID AS AN ANTISEPTIC AND DISINFECTANT.

A few notes of a case illustrative of its beneficial effects in injuries of the chest:

On the third of May last, I was called to see J. Davis, of Birchville, Nevada County, whose age is thirty-five years; spare habit; bilious temperament; a laborer and native of Wales.

I found the patient under the following circumstances: Supported in a semi-recumbent posture; almost pulseless; extremities cold; surface covered with a cold, clammy sweat; hurried respiration, with slight expansion of the chest; hemorrhage from a wound in the chest, made by a mining pick upon which he had fallen, the point having entered the chest on the left side, two inches to the left of the nipple, and passing diagonally across the chest.

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From a friend I learned the following particulars: While descending a mining shaft, a depth of twenty feet, the patient became dizzy and fell, striking upon one of the points of a pick he had in one hand while descending the shaft, falling about ten feet. In a few moments he recovered from the shock, got up and pulled out the pick which was hanging to his chest, having passed in eight inches. He was soon removed to the surface and it was discovered that he was bleeding very freely from the chest wound. He was removed to his home, a distance of one mile, where I saw him a short time after under the circumstances already stated. I administered at once two ounces of brandy, and ordered the patient to be laid down with the wound in a pending position. On examining the character of the injury, I found the wound made by the pick, commencing and penetrating the soft parts over the sixth rib, passing *under* and entering the chest between the fourth and fifth ribs, thus making a valvular opening into the chest, through which, at each *expiration*, air and blood passed freely out. By the fortunate character of the injury, no air could well enter the chest. Looking upon the case as hopeless, owing to the internal hemorrhage and sinking condition of the patient, I so expressed myself to the friends of the patient, with a proviso, that if the bleeding could be arrested and the blood extracted from the chest cavity, there might be strong hopes of a recovery. I was requested to do as I thought best in the premises. Accordingly, the patient was placed on the left side and an incision made, opening *direct* through the soft parts corresponding to the point where the pick passed between the ribs, taking great care to permit no air to enter the chest, and directing the patient to hold his breath as much as possible; at the same time keeping a sponge applied to the opening made with the knife at each inspiration, and removing at each expiration, while the patient was so placed as to make the opening pending. By this means I drew from the chest about three pints of blood and coagulum, when the respiration became quite easy. At this point, I

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made an exploration of the wound, and found that the pick had passed directly through the lung. With a soft sponge, filling the size of the wound, fastened to a gum elastic bougie, I sponged out the entire opening and removed a considerable quantity of coagulum from the chest. I then prepared a solution of carbolic acid and glycerine (one of the former to twelve parts of the latter), and with the same sponge passed in and touched the entire track of the injury with the solution, a distance of nearly eight inches, at the same time keeping the external opening closed with compress to prevent the admission of air. At this point, I closed the opening made with the knife with stitches, closing the whole with strong adhesive straps, and allowed the drain (if any) to take place at the valvular opening made by the pick.

For several hours I remained with the patient, during which time I administered stimulants, darkened the room, and permitted no excitement. As reaction came on I ordered the following:

Sulph. magnesia, oz. ij; ant. et pot. tart., grs. ij; fluid ext. verat. viride, gtts. xxx. Aq. Oss. Misce. Dose—A tablespoonful every two hours, till the bowels should be freely moved.

As I live at some distance from the patient, I left orders to give anodynes, if cough and restlessness supervened. Saw patient in the evening; pulse indicated reaction as taking place; no more bleeding; air passing out of the wound at each expiration; ordered stimulants to be given with caution. Saw patient the following morning; bowels well acted on by the mixture given; passed a quiet night; pulse 65 per minute; slight cough, no fever; pneumonia making its appearance; slight crepitation through the lung contiguous to the injury; discontinued magnesia, but continued veratrum and antimony, to hold the pulse at 65 per minute; ordered chicken broth, and perfect rest upon the left side; compresses, moistened with the acid mixture, kept to the left side; air passing

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out of wound, but in less degree. Saw patient again in the evening; found him doing well; discharge from wound slight.

On the morning of the 7th, saw patient; doing well; pulse 68; respiration easy; slight crepitation; passed a comfortable night; continued treatment; no discharge from wound. Saw patient in the evening; found everything favorable; ordered ten grains Dover's powder; no discharge from wound.

Saw patient on the 8th; passed a quiet night; pulse 70; respiration easy; skin moist; no crepitation; continued treatment.

Saw patient on the 9th; pulse 74; respiration easy; no cough; ordered beef tea and brandy, with soft boiled eggs; allowed patient to turn on his back; no discharge from wound; no crepitation; no pain in the chest.

Saw patient on the 10th; pulse 74; no cough; rested well during the night; continued stimulant and nourishing diet; patient allowed to sit up. On the 11th, found patient improving rapidly.

Did not see patient again until the 13th, when I found him convalescing rapidly; wound entirely closed and stitches removed; crepitation entirely ceased; ordered stimulants continued with more solid diet.

Saw patient on the 15th; rapidly improving, though weak; discontinued all medical treatment; pulse at this time 74 per minute; respiration, 16 per minute.

On the 19th, saw patient, when I discontinued any further professional visits. At the end of three weeks the man travevlled by stage a distance of thirty miles, without the least inconvenience or disturbance of the lungs, other than a slight pain in the region of the injury. In five weeks from the date of the injury the patient was pursuing his labors as a miner, and up to this time has experienced no trouble from the injury.

Among the many remarkable cases in surgery which have occurred in California, the following, reported by a member of our society, is worthy of special consideration:

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GUN-SHOT WOUND OF LIVER AND KIDNEY.

BY W. R. CLUNESS, M. D., of Sacramento.

On the 9th of November, 1870, at 12 M., I was summoned to attend Mat. Greer, who received a pistol shot immediately below the costal cartilage, at its junction with the ninth rib of the right side. On examination, it was found to have passed almost directly backwards and to have emerged from the body at the lower border of the last false or floating rib, one and one-half inches from the centre of the spine.

General palor of both countenance and body, together with a slow, feeble pulse, indicated the intensity of the shock which the system had sustained. That any alarming hemorrhage was taking place internally was not deemed probable from the evidence elicited by a careful physical examination. The pulse was not hemorrhagic, and a few ounces only had escaped externally. Alcoholic stimulants, with opium, were freely administered, to bring about reaction and to relieve pain.

The injury being considered almost necessarily fatal, and the patient suffering much pain, half a grain of the sulphate of morphia was administered hypodermically, in addition to the two grains of opium taken by the stomach. A single roller was now loosely applied around the body, and the patient left in the care of a nurse. Reaction was taking place so slowly that at four o'clock P. M. no perceptible change was discernable. At nine o'clock P. M., the pulse had increased in frequency and the surface of the body was more nearly of its normal temperature.

After passing a tolerably comfortable night he was found, at nine o'clock of the following morning, fairly under the influence of the anodyne, which had been repeated at ten o'clock P. M.; pulse 120, of fair strength and volume. A slight sero-sanguinolent discharge was oozing from both wounds, while the abdomen was somewhat tender and tympanitic. About a pint of urine was voluntarily voided and was found to be mingled with blood, which was thought to

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have probably arisen from the urethra, a stricture having been forcibly dilated on the morning of the day of the accident. Further investigation, however, induced us to conclude that the right kidney had been injured by the ball, and on the 12th, three days after the injury was sustained, our suspicions were verified by the escape of urine at the wound of exit of the ball.

Up to this time there was nothing worthy of special notice, other than the general peritoneal inflammation already referred to. Beef tea, milk and other articles of diet were taken in fair quantities, and on the following morning the bowels were well moved by a dose of castor oil and spirits of turpentine. At this date, a deposit of bile, of a greenish, yellow color, was observed surrounding the wound of entrance of the ball, and it was now established beyond question that a urinary, as well as a biliary fistula was established. The ball had passed through at least the right lobe of the liver, and also the right kidney, and any reasonable hopes of recovery which might have been entertained were now almost entirely abandoned. The hypodermic injection of morphia was practiced sufficiently after to relieve pain and insure rest, and the same general sustaining line of treatment persistently carried out, until the 20th of the month, when, to our surprise, the peritoneal inflammation had evidently become materially abated.

About half the normal quantity of urine was voided, per *viam naturalem*, while the other half, accompanied by large quantities of pus, escaped at the fistulous opening in the back. During each act of micturition, also, pus in considerable quantities was found to have been voided with the urine. Quantities of bile were found deposited around the fistulous opening near the liver, at each dressing, which occurred at least three times daily.

Although much reduced in flesh, and so enfeebled as to require assistance to perform the slightest act, our patient evinced wonderful tenacity to life and a firm belief in ultimate recovery. It was now even deemed possible by his

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physicians that he would recover, although no one dared express belief that so favorable a result would reward our efforts.

About the 12th of November, without special treatment other than the occasional application of nitrate of silver to reduce exhuberant granulations, the biliary fistula had entirely healed, while the urinary was longer than ever.

From this date until about the first of January, the same general treatment was persistently carried out, when it was discovered that pus had commenced to burrow between the spinalis dorsi muscles, and an incision about three inches in length and two in depth was made, with the view of affording free exit to all the secretions, and with the hope of stimulating granulations from the bottom of the wound. The operation was well sustained, and the finger could now be readily introduced into the sinus, which was found to be much larger than was suspected, and carried into the body of the kidney, the greater portion of which would seem to have been involved in the track of the ball. The wound was now well filled with lint, saturated with carbolized oil (half drachm to the oz.), and the usual bandage applied. As often as occasion required this dressing was renewed, and the system supported in every conceivable manner.

By the first of February, the sinus seemed disposed to granulate from the bottom, and the quantity of pus and urine to become less. Towards the last of this month, also, his strength began to return, and by the first of March he walked across the floor with the assistance of two men, and in about another week, all of the urine secreted passed per *vias naturales*. It was not, however, until about the first of April that the sinus had entirely healed. From that until the present date, October 10th, Mr. Greer has continued to improve slowly but surely. Both fistulae have remained entirely healed, being well filled with a firm and healthy cicatrix, which shows no disposition to become re-established. In fact, from the improvement manifested during the last two months, I

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now entertain but little doubt that in a few months more his health will be restored to its usual vigor.

Throughout the entire treatment, the hypodermic administration of morphia was relied upon to relieve pain and reduce inflammation. Without it, I am well convinced, our patient would have died early. Its benefieial effects were truly magical. The carbolized oil also played a most important part in the treatment of the urinary fistula, in fact, it was simply invaluable.

It is somewhat to be regretted that a tolerably well established habit is the result of the long continued use of opium, from which, however, I entertain reasonable hopes of an early discontinuance.

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COXALGIA;

OR HIP JOINT DISEASE AND ITS TREATMENT.

By L. C. LANE, M. D., of San Francisco.

The affection designated by the above title is one which, from the frequency of its occurrence on this coast, as well as from the difficulties which surround its treatment, should give it a high place among the surgical subjects which may be presented for consideration by the State Medical Association of California.

Statistics showing the frequency of the affection with us cannot be procured, yet that the disease is by no means a rare one is a fact that every surgeon and physician will readily admit; and as to the difficulties which attend its treatment, they are so great, that if I were to institute a comparison between internal and external medicine, I would say that coxalgia, as a surgical affection in the latter, singularly corresponds, in its uncompromising obstinacy to yield to treatment, to phthisis pulmonalis in the former.

The disease usually heralds its appearance by symptoms which are more remarkable for their obscurity than for definiteness of character. As some one has aptly said, it is first announced in the distance, and this very fact may readily mislead the surgeon as to the true seat of the affection; for instead of the coxo-femoral articulation being the primary seat of pain, this manifests itself away from the joint and similar to neuralgia phenomena, at some pesipheral point further

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removed from the cerclro-spinal axis in this case—viz: in the region of the knee.

A careful study of the coxo-femoral articulation by the Weber brothers has demonstrated that the acetabulum and head of the femur are spheres of equal magnitude—the one hollow, the other solid—and which, in the normal state, are always in contact and admit of no vacuum, as the famous Italian Paletta once taught. The pressure of the atmosphere retains the osseous surfaces together, and thus the muscles are relieved ordinarily of all effort to suspend and support the limb in common locomotion. If, however, the inhabitant of a high altitude descends into the valleys below, he finds the atmospheric pressure greater, and hence his gait is accompanied with some constraint, from which he is free in his mountain home; but if the man from the valley ascends the high lands above him, then, the air being lighter, he is forced to compensate for the lessened pressure by increased muscular effort, and he becomes weary more quickly than at home.

Besides the osseous structure, we have about the joint an endowment of ligamentous organization which demands some study as to the form and disposition of its constituents ere we can rightly comprehend certain coxalgic phenomena. For example, the articular capsule is strengthened in front by Bertin's ligament, called also the ilio-femoral. Bertin's ligament is one of the most tenacious and powerful ligaments in the human body, so much so, says Hyrtl, that in dislocations of the femoral head it is never torn asunder, and is one of the chief agents of opposition to reduction, unless the surgeon so applies the reducing power as to elude the resistance which the ligament may offer him. The capsular ligament, posteriorly, has no element of strength added to it such as we find in front.

Having looked at these ligamentous structures, let us study how they are influenced by different positions of the limb. First, as to the anterior face. When the leg is extended, the anterior face of the capsule, together with Bertin's ligament,

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is made to occupy a tense spiral direction; in semi-flexion, this is relaxed, the spiral being unrolled; but when flexion is complete, then torsion is effected in the opposite sense. On examining the posterior face of the capsule, we find it weak below, at the union of the external third with the middle third; the fibres converge, fanlike, to be inserted into the digital fossa, the handle of the fan resting in the fossa. Now, if we extend the limb, this face is tense and twisted on itself, but in semi-flexion, this face becomes quadrangular and is relaxed; but if the flexion be carried until it becomes complete, then we find the posterior face of the capsule similar to the anterior one, thrown into a state of tension. The facts here stated are reserved for future application.

Tendons, as well as the outer part of articular capsules, are micrographically similar, if not identical. They are composed of hyaline, cylindrical fibrillæ, which are long, elastic and uniform in size. These fibrillæ are from 3-10,000 to 8-10,000 of a line in diameter. According to their mode of union, we have ligament, tendon, articular capsule, etc. Such fibrous tissue was pronounced by Haller to be insensible, but Bichat discovered that it is sentient when inflamed; Bichat, however, thinks that the sensation in such cases is located in the periosteum, upon which the fibrous structure is fastened. According to Bichat, distension and torsion are active causes of pain in such tissues.

Now, as we have found the coxo-femoral articulation composed of two essentially different anatomical elements, viz.: *osseous* and *fibrous*, so we may divide the coxalgic malady into two great classes, to wit, those originating in the osseous and those originating in the fibrous tissues. This classification is that of Nilaton, who names the one type capsular, the other anti-capsular, and these types are distinguished by notable differences of position of the limb.

The disease, whether located in the soft or the hard parts, is, as a rule, peculiar to childhood, and is a local manifestation

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of a constitutional affection, which may be scrofula, syphilis or rheumatism.

The capsular form is announced during its earliest stage by obscure pain and perhaps some swelling or fullness about the hip joint. As the disease progresses, pain is felt also at the knee; in fact this symptom is so frequent, that in children, in case no disease of the knee can be detected, where such pain is complained of, the suspicion is at once awakened that we have a case of commencing coxalgia. Now, if the disease advance in the soft parts around the acetabulum, the little patient involuntarily attempts to lessen the pain by placing the limb in that position which will relax the articular capsule, and this is accomplished by placing the limb in abduction and half-flexion, since, as we have seen, it induces parallelism in the fibres of the capsule, and at the same time unrolls from its natural spiral direction the ligament of Bertin. To bring the limb into the posture named, the fluxor and abductor muscles are called into action, and the combined force of these muscles will, at the same time, effect rotation outwards. Thus we have a rational explanation of the position which the leg, in this form of coxalgia, always assumes. As a familiar example of this posture, I may state that it is that of a dancer, who whirls on one leg—viz: on the sound one.

To counteract this position, so illy suited for progression, the patient next inclines the pelvis toward the diseased side, carrying the acetabulum inwards and backwards on the affected side; also, the iliac crest is carried downwards and forwards; and the knee is so bent that the affected thigh bone assumes a position parallel with the sound one; finally, curvature of the lumbar vertibræ takes place, in order to compensate the pelvic curvature.

The phenomena just described give the appearance of elongation of the limb on the affected side. Accurate admeasurement has determined that this elongation is merely apparent, and not real.

The intra-capsular type of coxalgia, in which the osseous

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and carlilaginous structures are the seat of the disease, presents symptoms quite the counterpart of those above given. There is here real shortening of the limb; likewise adduction and rotation inwards. The adduction and inward rotation may advance to such an extent that the affected limb rests on its fellow, and the outside of the limb may even be turned so as to look forwards. In this form of hip-joint disease there occurs, sooner or later, actual luxation of the head of the bone. This dislocation is brought about as follows: The femoral head may become the seat of tubercular affection, which finally softens and spontaneous luxation is the result. Or, what is quite as frequent from the mathematical resultant of the muscular forces which are brought to bear on the upper part of the femur, the head of this bone is caused to continually press on the upper and outer quadrant of the acetabulum, which finally inflames, softens, yields, and allows the femoral head to escape upwards and outwards on the ilium, when we have shortening, inversion and abduction of the leg.

In the two forms of disease described, abscesses appear in the later stages about the upper part of the thigh, especially on the outer and posterior portions. These abscesses will usually run a long course, and in the intra-capsular type, osseous detritus is now and then evacuated.

Coxalgia is an extremely chronic affection; it reckons not months alone, but often years in its course; its unfortunate history is diversified by relapses, cessations, and again advances, alternately dispiriting or inspiring with hope both patient and surgeon. Not content with assuming one type alone, the disease not unfrequently merges from the fibrous form into the more formidable osseous form; I say more formidable, because this type, despite all plans of treatment which have been invented, always mutilates the architecture of the locomotor apparatus, and though the surgeon may boast of having cured it, it never fails to leave some marks of its previous ravages.

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TREATMENT.

The history of the therapeutics of coxalgia presents the usual diversity of remedies which has obtained in the case of all formidable affections. The plans of treatment may be placed under four heads:

First—That of counter irritation;

Second—Excision of the femoral head;

Third—Mechanical appliances admitting of locomotion;

Fourth—Mechanical appliances aiming at perfect rest of the coxo-femoral articulation.

The first plan, that of counter irritation, in the multiform shapes of the issue, seton, cautery and vesicant, have failed to accomplish what was promised by them.

I witnessed five cases of excision of the femoral head, in the practice of the late E. L. Cooper; the first case eventuated remarkably well; in the remaining four cases the patients were not improved by the operation.

The third plan, viz: machinery not interfering with locomotion, has failed to accomplish what has been claimed for it.

The fourth plan, viz: mechanical appliance by which the limb and affected joint are put perfectly at rest, are now receiving the approval of most surgeons. Of such apparatus, I will mention the wire breeches invented by Bonnet of Lyons, though often accredited to an American surgeon. This apparatus has done good service. The wire breeches embody the principles which have been given to us in a simpler and more convenient machine by Messrs. Martin and Collineau of Paris. The surgeons mentioned have written a prize essay upon coxalgia—crowned by the French Academy in 1865. It is to this work, which remains untranslated, that I owe many of the ideas presented in this communication. In this work are detailed, in extenso, various clinical observations, which led the authors to adopt an apparatus which keeps the limb perfectly at rest.

The apparatus of Martin and Collineau, which I have had

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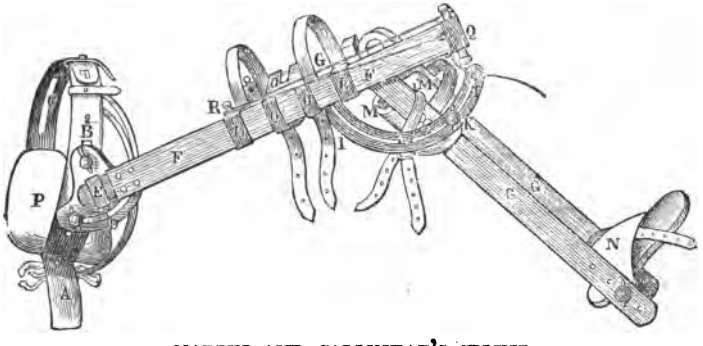
made by an artisan of San Francisco, consists, as will be seen in the annexed sketch, of a pelvic portion, which is well padded, arranged with hinges, so that it may be opened and closed, and is designed to constantly support the acetabular region, thus securing rest and obviating luxation, where that is threatened. Attached to the pelvic portion is a long splint-like apparatus, so contrived as to accommodate itself to the curvature of the knee, and to support and gradually extend the limb, though it be, as is often the case, partially anchylosed at the knee and hip joint.



MARTIN AND CALLINEAU'S SPLINT,

In which is seen the Pelvic portion designed to support the diseased joint. Also, the contrivance for extension, placed alongside the thigh, above the knee; and finally, the part in which rests the lower leg.

This apparatus I have used in eight cases; in five, the cure was complete, the deformity left being slight, and the power of locomotion quite satisfactory. In the sixth case, the child was the patient of another physician, and passed from my observation. The seventh and eighth cases are still under treatment, and promise to terminate favorably.

The period during which the apparatus must be used varies from three to six months. All the patients who have used it, so far from finding the apparatus irksome or inconvenient, have experienced quite the reverse; in fact, after the first two weeks, the little patients, when removed from the apparatus,

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will cry to be returned to it again, as thereby the affected limb is liberated from pain.

The constitutional diathesis should be kept in mind, and appropriate remedies should be administered internally at the same time that the mechanical treatment is being carried out. The surgeon should not be in haste to unsheath his lance to open any abscess which may appear about the joint; in fact, he should delay as long as possible, and then, if the cavity be a large one, it is better to empty by means of trocar and canula, and then to close again. In this wise, he will avoid the constitutional reaction which will follow a free opening, and the consequent introduction of air into the cavity.

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SKIN GRAFTING.

By W. FITCH CHENEY, M. D., of Chico.

E. B—— presented himself with wound of left hand. An "edge saw" had cut through the metacarpo phalangeal articulations, except that of the little finger. The saw struck the shaft of the first phalanx of that finger in such a way as to take out a small piece of bone, and denude the whole length of the finger along its dorsum, extending back half the length of the metacarpal bone and giving a large surface from which the tissues had been torn—leaving a large granulating surface, after the stump of the metacarpal bones had healed.

My patient was a laboring man, and "earned his daily bread by the sweat of his brow," consequently I determined to resort to skin grafting; not that I doubted the ability of nature to cover the part, but it was a matter of vital importance that he should get into a condition as soon as possible to earn his livelihood, as well as pay his surgeon.

Following the method proposed by M. Reverdin, and successfully carried out by several English surgeons, with a fine-pointed dressing forceps, I pinched up a small portion of skin over the insertion of the deltoid, and cut it off with scissors. Without haste, after spreading it out, I applied it to the denuded surface, pressing it firmly down, but making no cut in the granulations; over this I laid on a bit of lint, wet with dilute carbolic acid, held in place with an adhesive strap. Proceeding as before, I applied a second bit of skin to another portion of the granulation, which I dressed with lint smeared

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with simple ointment, and bound on as before; over all, I used the ordinary dressing of lint wet with carbolic acid solution.

The inner dressing I did not remove for seventy-two hours. The one dressed with carbolic acid seemed to have sunk into the granulations, leaving a pellicle of sphacelous tissue, that under the magnifying glass was evidently the epidermis. The one dressed with cerate, I found perched up on the granulations, all vitality being lost, yellowish white in hue, and without attachment.

Afterward I dressed the wound every day. On the second or third dressing, the piece dressed with cerate washed away, as well as the epidermis of the other, leaving a thin, bluish pellicle, easily discerned with the magnifying glass, which soon declared itself as true skin, which gradually increased in diameter, thereby much expediting the healing process.

SECOND CASE.

This case was that of J. B——, a man of robust health, aged thirty-five years.

This case was one of gun-shot wound of the lower third of the arm, near the bend of the elbow, on its anterior aspect. The arm was large and muscular, and the heavily-loaded shot gun had torn out a large amount of tissue. After sloughing had taken place, and the granulations had filled the cavity properly, acting on the same principle as before, and in the same manner, I grafted on two small pieces of skin, one dressed with the carbolic solution, the other with *dry* lint. In this case I met with the same success as before. The one dressed with the acid solution acting as before, while the one dressed with the dry lint never showed vitality. The point of skin was, after some ten days, making reasonable progress, when the patient determined to go to his home near Davisville, and I regret to say that Dr. Gardener, his surgeon at that place, wrote me soon after that when he came to dress the wound the patch of new skin, although *in situ*, was dead,

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caused most likely, as the patient explained, by several hurts he had received while en route, and the motion of the dressings while in the cars and other conveyances.

In operating, I was careful to use sharp scissors, and to cut no deeper than the true skin. The operation itself is trifling to the patient, and I am satisfied that in cases where the wound *may* be healed by nature, it is advisable to perform the operation to *hasten* a cure. As to those cases of large granulating surfaces, where nature unassisted cannot cover the parts, none will question its value. Again, in those cases of burns or other accidents, when although skin covers the surface, yet when there may be a contracted cicatrix producing deformity, this mode of procedure will be invaluable.

Since writing the above, I learn from Dr. Gardener that at the time he wrote me he supposed the graft in the last mentioned case had lost vitality, but upon later examination it had re-appeared, and when last seen, ten days ago, was sending out new skin on all sides.

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THE GENESIS OF CRIME.

By EZRA S. CARR, M. D.,

[Professor of Chemistry and Agriculture in the University of California.]

Not very long ago, a clergyman in our commercial metropolis took occasion to remonstrate with one of his female parishioners with regard to her intended use of chloroform in an approaching confinement. He said to her:

"You are attempting to evade an unequivocal expression of the will of God, who has laid a curse upon your sex in consequence of the first transgression. *It is not strange that the medical profession, so largely made up of skeptics and materialists, should recommend these things, but no well instructed Christian woman would expect a blessing in attempting to outwit her Maker.*"

The lady replied that she should avail herself of the merciful alleviations of suffering with no more compunction than the farmer would have, who cleared his fields of thorns and thistles—man's share of the same curse.

I use this story merely to illustrate the attitude toward the highest and noblest work of our profession; its advancement of what may be called the Science of Humanity; not only by clergymen, but by both the so-called learned professions.

If we incur the odium theologicum in putting the great discoveries of modern science to practical beneficent use at the sick bed, how much more shall we, in treating *crime as disease*

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and applying the greater discoveries in psychology and physiology to its prevention and cure.

Great and very grave questions of social reform are pushing up in all directions; assuming formidable shapes; and I claim that our profession is the only one at all qualified to direct them into safe channels, because in it alone will you find anything that approximates knowledge of what the human creature is, upon which law and theology have been experimenting so many centuries.

I do most deeply feel our incompetency as guardians of public and private health to meet these questions, and I am ashamed of our narrowness and illiberality. I am neither a Pharisee nor a Philistine, but I will give thanks that a medical education, from first to last, is calculated to keep a man abreast of his time and well up in the present state of all the sciences which are affluents to his profession. If a doctor is an old fogy, it is either a case of hereditary transmission or of mental ænemia, never a trade mark. You have but to compare the education of the theological school or the law school, the routine of classical and literary studies, the elucidations of Scripture and of doctrines, the details of legal forms and reasons therefor, with those living streams of positive, objective, and yet in the widest sense philosophical, knowledge of zoology, botany, chemistry, psychology of the body, soul and mind which make the unit man, which form the education of the physician, and you will see why I think we ought to be readier for service than any other class of professional laborers. Dr. Martyn Paine said: "Nothing short of an enlightened and comprehensive view of nature in all her departments can constitute an able practitioner of medicine."

What is law but a record of what it has hitherto been thought best to do for the order and welfare of society? Society is always pushing up against the old moss covered walls of custom and precedent, crystallized into laws; always outgrowing her laws, and casting them as a snake her skin. But a scientific law, though capable of infinite and

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varied application, is never outgrown; it is the same yesterday, to-day and forever. And we all know that all history is a record of the new departures which theology has taken from its old standpoints. It was a hard thing for the theological mind to widen its comprehension of the act of creation so that the six days' work, so well defined, so easy to understand, should cover æons of development from the formless and void. It was hard to part with Archbishop Usher and have archeology and ethnology uprooting our notions of man's antiguity upon the planet. Alas for the mind that longs to be at rest! Modern science will perchance rob us of our first parents; she has put an irreverent foot note under the line—

> "In Adam's fall we sinned all."
> "Whence came that curse men call primeval sin?
> From Adam's children breeding in and in"—

Is the sharp satiric (or Satanic?) commentary of Dr. Morton. And with this long preface I reach my subject—

THE GENESIS OF CRIME.

A subject of the profoundest interest to every human being, and the one which has had the least rational and philosophical investigation. It is extremely difficult to look at this subject with minds free from the bias of early education; the very first step seems to bring us in conflict with the plain teaching of scripture, that sin and death entered the world together through the transgression of our first parents. Not only this, but as a part of the same lesson, we have been taught that for this original fatal foulness, nature offers no remedy. So the physiologist, the biologist and the social reformer, just as the astronomer and geologist did before him, is obliged to leave father and mother in the pursuit of truth. Every great advance in scientific truth has involved a sorrowful leave-taking of something which, long held as truth, is still sacred to us from habit and association. The new treasure is always worth all it has cost, humanity has gained, religion itself has gained, by that very rejection of authority, which marks the

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first steps in every stage of progress. The true scientist need not pause to reconcile the truth he finds with something which has passed for truth in former ages; let him put his findings to practical tests and leave the results to stratify as they will.

I think the time has come for the medical profession to take up the subject of *moral plagues* and investigate them in a purely scientific manner, and to speak with authority in regard to their repression and cure. That noble paper, "Is Intemperance a Disease?" the report of a committee of the American Medical Association, ought to be published by the Tract Society, and is worth all the temperance publications of the last ten years. It is a plain medical report; yet it is one of the best medico-legal papers I have ever seen. The genesis of the crime of intemperance, its causes, prevention and cure are clearly shown, as well as the duty of society toward this class of unfortunates.

I suppose the world might have been less generally amused and entertained if the last session of the same body had given a part of its time to the consideration of the cause, prevention and cure of another great moral plague, far worse in its effects upon the race than the threatened danger that a dozen or so of women in the region around Philadelphia should resume the ancient practice of midwifery; it might have been as well to have gone behind the bare facts of such a subject as that of criminal abortion, which neither clerical nor medical fulminations are likely to cure, to find the genesis of this great crime in the selfish and shallow teaching of the mothers of the race.

Where are the mothers who have been adequately taught the physiology even of the "Temple of God in the human body," not to speak of the moral and social physiology of which this is the basis. We have been making laws for a being we are only beginning to become acquainted with. What does Dr. Storer say—"The science of female hygeine is only in its infancy." Her minister says, "Child be thou good,

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and let who will be clever," and preaches marriage and maternity as the chief end of the grown child's existence. What result could you expect from the heedless precipitency with which thoughtless, ignorant, unexperienced children incur the grave responsibilities of parentage? In California, boys of fourteen and girls of twelve years of age can contract a legal marriage without the consent of parents or guardians. Is it to be wondered at that a creature whose brain has been overstimulated all through the period of puberty, whose outdoor labors at croquet, and indoor triumphs at crochet are exhausting to her bodily strength should leave the work of reproduction to the healthy organisms of the lower orders? The voice of our profession ought to be audible and authoritative in questions of female education.

I know of no men or body of men so well qualified as physicians to speak upon questions of social reform, and I think the present interests of morals and religion depend immensely upon our enlightened consideration of them. Take, for instance, such measures as those contemplated by Dr. Holland's bill. I do not consider myself qualified to say that those are the best possible measures, but I do say that it is the business of our profession to devise and to testify with one voice to the necessity of legal interference with this evil. The medical profession here, as elsewhere, in dealing with the physiological and psychological aspects of crime, must stand as the informing spirit of the legal, because it contains the knowledge of facts, experience, and principles of the higher (scientific) laws upon which justice and a righteous judgment can be based. On the other hand, without the lawyer's knowledge of the *legal* principles involved in proposed reforms, and their consonance with guaranteed individual rights, we could accomplish nothing of practical value.

The phrase, "legalizing crime," embodies a popular fallacy. In restricting the social evil by legislation, and to abate consequences which fall upon the innocent as well as the guilty,

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we legalize the crime of lewdness exactly as we legalize the crime of murder by our army and navy regulations. In a country like ours, where there is so vast a diversity of condition and social development, it is impossible that laws should express the moral or religious sentiments of the more enlightened classes. But that the State has a right to interpose safeguards against physical deterioration, and to make sanitary regulations where prohibitions would be useless, is, I think, beyond question. It is merely restricting the distribution of infection, by which the blood and brains of another generation shall be tainted and corrupted. It is a beginning in the right direction.

It is greatly to be regretted that the bar and bench have so little faith in our knowledge of the Genesis of Suicide and Murder that they flout our testimony in such cases as mere metaphysical jargon.

In a recent trial, in which the medical testimony was of the highest importance, yet practically ignored, a condensed statement of what light physiological and biological knowledge are throwing upon the question of moral responsibility might have induced greater respect for the testimony of medical experts. At the last convention of the Superintendents of Insane Asylums, it was said that lawyers ought to study mental diseases just as doctors study anatomy. Yes; for psychology is just as really a science as geometry; "it is the study of mind, presented as a phenomenon of the universe." Biology is a wonderfully exact science, both as to its methods and results, dealing not only with the life of the individual, but taking account of human beings as aggregates, and considering the experiments which nations have been making upon one another on the field of history. There can be no science of society, worthy of the name, until the sciences of physiology and biology are built into its foundations. Until then, the world must submit to moral and legal quackery, and to the operation of laws as unjust as they are pernicious. We doctors know enough of law to know that our English and

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American practice is not founded upon enlightened principles, *because it ignores some of the most important discoveries of modern science.*

It is for science to instruct the bench by showing the facts, the *genesis of crime in moral malformation*, that men (and women) "who were not born to be hung, may not be hung for having been born."

Is it too much to expect that the science of *moral* pathology should rank with that of physical pathology in importance? Daily the physician is called to deal with inherited disorders, with the complications of climate and race, with nervous diseases induced by religious excitement, with latent insanity; the subjects for this study are always before him. Let this study become systematized and its results published, and law and education are furnished with data that are above suspicion, as a foundation for reasonable reforms.

The Medical Superintendents of our Insane Asylums have done noble service in the cause of humanity in their investigations into the *genesis* of moral insanity. They tell us: "It is not enough to prove that a criminal in court is sane, as he may be even in the opinion of experts and the public, but whether, so to speak, a great wave of insanity has rolled over his mind." This statement is the result of dispassionate, philosophical studies into the differences between what have been classed as *voluntary* actions, and those which, for want of a better term, we may call *volitional*, or belonging to a state of complete consciousness.

It is believed that the mind sometimes passes suddenly into a state of *unconscious cerebration*, performing actions similar to those of somnambulism. Now suppose we have the conditions of bodily disease, of an over-excited brain, the intense momentum of passion, a suicide occurs, or a homicide, and medical testimony comes in. It is obvious that "nothing but the strictest science can save us from the two sins of sentimentalism and cruelty."

When crimes are studied exactly as physical diseases are,

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with reference to their generation, modifying causes, prevention and cure, we may expect to see the last remnant of barbarism expelled from our statute books. Cases of unjustifiable homicide and suicide will be assumed to be cases of moral irresponsibility, involving the forfeiture of personal rights and perpetual restraint and guardianship. There will be no occasion for executive clemency, or for the innumerable evasions and perversions of justice, now so common. The stream of moral contagion which now flows during a criminal trial will be dried up at its source, when the wisdom of prevention leaves scanty occasion for the wisdom of penalty, and the hapless beings who stand up for judgment are seen as candidates for asylums rather than prisons.

The law has necessarily to wait until science has established her principles beyond a peradventure, ere it takes a new departure. The law is wisdom in that it holds exceptions amenable to the averages, and tears away excuses and subterfuges. We have no quarrel with this. What we ask is to be allowed to mark the moral and mental as we do the physical exempts from the service of society, without suspicion and without reproach.

Is it expecting too much of our profession to look to it for initiative movements in social science? Certainly not, for many of these have already been taken. The profession which, through its labors, in half a century has prolonged the years of human life more than one-fourth their former average throughout civilized Europe and America, is quite equal to its proportionate elevation. The profession which has contributed more than any other to the cultivation and improvement of the collateral sciences, will win its noblest triumphs on a still higher plane. Having done so much to abate the misery of the race, it only remains to forge the connecting links between what has already been achieved, and what is still required, to make its authority acknowledged in all that concerns the welfare of man, whether it be in the reformation of barbarous laws, or the extinction of superstitions which are a

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bar to progress. We have made a long step in advance since Sir Matthew Hale condemned two women to death for the crime of witchcraft, because the scriptures affirmed its reality, because the wisdom of all nations had provided laws for its extermination; and because Sir Thomas Browne, a notable physician and author of the Religio Medeci, had sworn, as an expert, that he was clearly of the opinion that those persons were bewitched.

The humblest member of our profession may now become a co-worker with Carpenter and Huxley and Draper and Herbert Spencer in promoting purer morals, better laws, and a religion which helps a man to die, in helping him to live in intelligent obedience to the will of the Creator.

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MEDICAL TOPOGRAPHY OF SAN DIEGO.

By D. B. HOFFMAN, M. D., of San Diego.

San Diego is situated on the eastern shore of San Diego bay, nine miles from its entrance, in latitude thirty-two degrees thirty-nine minutes and eleven seconds north, longitude one hundred and nineteen degrees twenty-one minutes and three seconds west. The shape of the bay is not unlike the form of the Greek letter *Upsilon*, divided through its middle, perpendicularly—the short disc representing the mouth, or entrance, and the extremity of the long arm the head. The bay is about twenty miles long, and, on an average, two and a half miles wide.

Vessels drawing fifteen to twenty-one feet of water can go up the main channel twelve miles, or three miles above the barracks. Smaller crafts can easily reach the head, where many fine fresh-water springs are ever bubbling up their refreshing streams.

The eastern shore of the bay is generally low, rising slowly, as it recedes back, inland. The soil on the shore is fertile, and where not cultivated is covered with a dense growth of chapparal and luxuriant grass. The western shore is a narrow belt or spit of sand hills, except near the mouth of the bay, where it widens out and forms what is called "The Island." This island is principally sand, but, in favorable years, good crops of grain have been produced on it. Where it is not cultivated a good growth of wood is flourishing. Considerable quantities of wood and grass can also be found scattered over the "spit" at

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intervals. The site of the barracks is very handsome. It is a gentle plateau, sloping gradually down to the beach. On the west are the waters of the bay and the broad blue ocean. On the east a high and noble chain of mountains, whose tops are covered with fine forests of pine and oak, can be seen. The port buildings, officer's quarters, hospitals, etc., are located near the shore of the bay, and are large fine frame structures, with all the modern improvements, suitable to a warm and delightful climate. Everything in this respect could not be better for the health or comfort of the men and officers; and I have no hesitation in saying that this is the only proper place on this coast for the general hospital of this department.

San Diego county extends across the southern extremity of the State of California, and contains about thirteen thousand square miles. A broad belt, lying along the coast, is adapted to agricultural, horticultural and grazing purposes. The Coast Range, with its numerous spurs, runs through the whole length of the county, and constitutes an extensive mountain district, well supplied with timber, and known to contain a great variety of minerals.

There are also many beautiful valleys in this district, well adapted to the raising of wine, grain, cattle and sheep, which, at no distant day, must be settled by a happy and prosperous rural population. The Colorado desert, level and shrubless, stretches eastward from the mountains to the Colorado river. It lies below the level of the Gulf of California, the waters of which are believed to have covered it at a former period.

The harbor of San Diego is one of the safest and most commodious on the coast. The range of mountains that runs diagonally through, about the centre of this county, from the northwest to the southeast, has a general elevation of from twenty-eight hundred to four thousand feet above the level of the sea. The eastern slope is, for the most part, precipitous and rugged, while the western has a more plateau-like gentle declivity. The lower ranges are covered with various kinds of oak (*quercus alba*, *q. tinctoria*, *q. falseta*) and other kinds of

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hard wood trees, commonly found in countries of this latitude; while the summits of the more lofty piles have immense pines (*pinus palustris, p. abies*) covering them, which, at no distant day, will be valuable for building homes and navies for this part of the world.

There are no rivers or lakes in the county of any size or note. In fact, the Rio Colorado of the West, which is in the eastern boundary of the county, is the only prominent stream to be found of any size. There are several other streams that answer navigable purposes in the wet, or rainy, season, and, at this time, frequently interrupt all communication for weeks; but during the summer, or dry, season, are completely absorbed by the extensive beds of silicious sand of which their bottoms are principally composed. To make up, however, for this great and necessary want of a country, we have thousands of lagoons, living springs and running rivulets, plentifully distributed all over that portion of the county west of the desert. The lagoons are generally of good size and deep, affording a large supply of wholesome water for irrigation or stock, and seldom dry up. Many of the rivulets, especially in the mountain districts, are sufficiently large for mill purposes. The springs are large, and when protected by a curb, afford excellent and voluminous supplies of wholesome water.

INDIANS.

The Indians which inhabit this section of country formerly, it is evident, belonged to one tribe. The genuine name of that tribe, when the whites first visited this coast, was "Los Cayotes," and they recognized Juan Antonio, at least so says their history, as their chief. He then resided in the mountains north of Warner's rancho, at a place called by them "Cayotes."

This old chief's family still reside there, and one of his sons is the acknowledged chief of the tribe yet, bearing the same name. It is said, by the early Spanish writers, that the name of this tribe comes from the fact that these Indians, when first discovered, lived mostly in caves or burrows under ground

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like the annimal from which they take their name; and, I am told that, in the wild mountains, they still live in the same manner. This tribe, at the time of which I write, was probably much more numerous than at present. They scarcely number now, all told, four thousand. The old missions, established here during the latter part of the last century by the Catholic missionaries, attracted many of them away from their old haunts and hunting grounds. When once initiated at a mission, as a neophyte and laborer, the influence of that to the uneducated mind, attractive religion, and the easy mode of life which they led, wholly weaned them from their forest homes. The consequence was, that the once large tribe, acknowledging allegience to one chief, was divided and broken up into many small tribes. Wherever there was a pueblo or mission, there would be found one of the small tribes located in the vicinity, in what they called the rancheria. When once settled in this manner, they appear to have renounced all allegience to their old principal chief, as they chose a chief for themselves, who resided amongst them. But he, as a general thing, had little to do in their government; perhaps, now and then, they would apply to him, but oftener they would go to the civil authority or the priest of the mission with their complaints, and for redress of their wrongs. Thus they became a disorganized and miserable people, who were slowly allured from one step to another downwards, until quietly subdued by the meanest of motives—mercenary gain—into beasts of burden, "hewers of wood and drawers of water;" for they were made more literally slaves, by the sycophantic priests who once "lorded" it over this country, than the most abject African negro that was ever heard of. Now and then, during this period, some of the more vigorous and active chiefs, ambitious to regenerate their race and retrieve it from the terrible thraldom into which it had been merged by superior but more brutal minds, would essay a revolt or revolution, on a small scale; but Spanish muskets and bayonets easily and quickly quelled them.

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After the days of the missions came another evil, greatly to the detriment of the poor Indian, and which well nigh exterminated them. This evil was the settlement of the country, over which they were used to roam without restraint, by the white man. With the advent of this predominant race came the precursor of the dissolution of the red children of the forest, in the shape of "fire-water," and those low, revolting diseases, known only to the low, dirty dregs of society—rakes, harlots and libertines. At the present time there are but few of them who are not either drunkards, or diseased in such a way that life is but a curse to them. Those that are still living about the towns and missions have assumed civilized habits to such an extent that there is nothing peculiar or interesting about them. Those living in their old haunts, in a still semi-savage state, have many curious and singular customs, habits and traditional legends. They live in villages, often numbering many wigwams or huts. These are generally built by driving long poles in the ground, and bending them over, so as to form an arch; they are then thatched with straw all over, except a narrow hole in one end, which serves the purpose of a door. These villages are usually found near some stream, where there is a sufficient extent of good tillable land, for garden, agricultural or grazing purposes. They generally have a few head of horses, cattle and sheep, and frequently cultivate large fields of grain and fruit. Still they are somewhat nomadic in their habits, spending the summer in the mountains, and the winter on the coast. They also have a custom of coming down on the coast every year, at a certain time, for the purpose of taking their year's supply of fish. Instinct or experience has taught them that, at a certain season, millions of fish frequent the shore of the ocean, from some unknown cause, even to philosophers, and that, at that time, they are easily taken. Rude nets, or seins, manufactured from the tenacious bark of the "tione" tree, are generally used in taking them; and they are so expert and successful that the atmosphere is rendered pestiferous, for days at a time, in the vicinity of their fishing

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camps, from the refuse and surplusage, which they cannot cure before putrefaction takes place. This season does not generally last more than two weeks, at the end of which time both the fish and the Indians disappear from the coast for the year. In their conjugal relations they are like "Mormons." When a brave desires a wife or wives, he, like a true Yankee, goes to the parents, and bargains for them, the same as he would go to a store for tobacco or whisky.

The price is generally a horse, or the value of one in something else. Their laws allow them to keep as many wives as they can support, and also permit them to separate or voluntarily divorce themselves, whenever either party, from any cause whatever, becomes dissatisfied with the other. This, of course, renders their morals corrupt and bad. Fidelity is unknown amongst them, and they think it no sin to "cuckold" their husband, if they divide the spoils with him. In fact, he is so low in this respect that he will frequently hunt a bargain of this character, that he may get a drink of rum thereby. They have many fêtes, or festivals—or, as they call them in their language, "pow-wows"—during the year. These frequently end in bloody fights, when many are killed. One of these feasts, which I have never yet seen a description of, and which, I believe, is not practised by any other known tribe, is of so extraordinary a character that I deem it worthy of description.

As soon as the young girl arrives at the age of puberty, she is put, as it were, under guard of an old woman, who closely watches her until menstruation commences. As soon as this is noticed, the tocsin is sounded for a tatamado feast. It is obligatory upon the whole tribe to attend on this occasion. As soon as they get together, they first dig a round hole in the ground, large and deep enough to take the poor girl in up to her neck. The whole tribe, except the managers, during this time, are drinking, carousing and dancing in a circle around the scene of operations. After the hole is finished, it is filled up with dry wood, fragrant leaves and bushes, in such a man-

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ner as to be lighted from the bottom. On the announcement that everything is ready, one of the old men of the tribe, a kind of prophet or priest, steps slowly forward toward the pile, with torch in hand, pronouncing, in a loud, clear tone, an incantation, which, for sublimity and pathos, is scarcely ever equaled by our more accomplished, but less natural, divines. As soon as the old man is through, a rude chant is hummed by the whole assembly. When this is closed, the torch is applied, and, as the flames arise heavenwards, the whole circle, on bended knee and uplifted face, pour forth in unison a devout prayer for their future preservation from all evil. As soon as this ceremony is finished, the hole is filled or strewed over with fresh, green fragrant leaves. The poor girl is then placed by force in the hole, and covered up to her neck with the fresh earth just taken out. The heat left from the fire is frequently so intense as to make the poor thing writhe and howl with the most intense and burning pain for hours. No matter; the feast goes on, and the howl of the participants drowns that of the victim. She remains in this situation, without any food or anything else but water, which is given to her frequently and freely, or she would die—immovably fixed in this hot, seathing, vapor-producing hole, for forty-eight hours. During all this time, dancing, singing and carousing of all kinds is kept up by the tribe around her. When she is taken out, of course she is more dead than alive, and she is taken by the old woman to a comfortable place, when she is restored and revived by the "medicine man" of the tribe. This is the signal for the breaking up of the feast, and they all retire.

Thus the mothers of the fair daughters of the forest "bring out," or notify, to the world that their daughters are marriageable. It is true that there is some difference between this method and the fashionable one now in vogue in bringing out a belle in New York; but when one reflects that the same end is obtained—a husband—by either process, it is extremely difficult, in the abstract, to realize the difference.

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The women, as a general thing, marry at an early age, while the men seldom do so before their twenty-fifth year. Like Zenobia, there does not appear to be much love on either side, and they say that there is no enjoyment in the whole affair; but that it is a necessity of nature for health and for the propagation of their species.

But little information can be obtained in relation to their diseases. During the spring and autumn, fevers of different types prevail to some extent among them. I have seen them sick with the common intermittent, bilious and continued fevers. Diseases of the chest, also, prevail to a considerable extent during the winter months.

The exanthematous diseases play sad havoc with them when they come along. Their filthy and exposed method of living will not do for this class of diseases. Of remedies they have, or at least use, but few. Each rancheria has a sweat-house. This is made by digging a large hole in the ground, and covering it over with timber, brush and earth, in the shape of cone, making it air tight, with the exception of a small hole in the top for the escape of smoke. In this hole, which they dignify with the name of "sweat-house," or casa de sudor, when anything is the matter with them, they keep a good fire, which keeps the place so warm that one who enters will in a few moments sweat terribly. After the patient has sweat sufficiently to satisfy their ideas of treatment, he strips off his clothing and rushes out as if mad and jumps into the river, lake, or some other place filled with cold water. As soon as this becomes insupportable, he jumps out and runs or jumps about until reaction takes place. After this terrible ordeal, he drinks herb tea, etc., and if he is not cured, repeats the same dose every day until he gets well or dies. This is the treatment for most of their diseases. Last winter one of them had the small pox; he tried this remedy; it did very well until he got into the cold water, where he died before he could get out. I have seen them come out of one of these sweat-houses, seething and sweating at every pore, in the winter

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time, when there was snow on the ground and ice along the margin of the river, and plunge into the cold water, as if it were nothing. How they can stand the sudden shock, I am unable to discover, but they do it with as much nonchalance as a Frenchman affects a duel.

For gonorrhœa they use a strong decoction of an herb that grows very plentifully here, and is called by the Spanish "chancel aqua," and wild pigeon manure, rolled up into pills. The decoction is a very bitter astringent, and may cure some sores, but that it fails in many, I have undeniable proof.

In syphilis, they use the actual cautery, a living coal of fire applied to the chancre, and a decoction of an herb, said to be something like sarsaparilla, called rosia. It does not grow in this vicinity, and as I have never been able to get hold of any of it, I can say nothing about its medicinal virtues. It also frequently fails to cure this disease, and they have to get other aid or die.

This completes the list of their medicines, if we omit the "charms," etc., which their "medicine men" alone know the value of, and use very profitably at times.

The accouchement of the female is somewhat different from the usual mode practiced by other tribes. A few hours before the time arrives, she gets up and quietly walks off alone, as if nothing extraordinary was about to occur. In this way she deceives all, even her husband, and hides herself away in some secluded nook, near a stream or hole of water. At the foot of a small tree which she can easily grasp with both hands, she prepares her "lying in" couch, on which she lays down as soon as the labor pains come on. When the pain is on, she grasps the tree with both hands, thrown up backwards over her head, and pulls and strains with all her might, thus assisting each pain, until her accouchement is over. As soon as the child is born, the mother herself ties the naval cord with a bit of buckskin string, severing it with a pair of sharp scissors, prepared for the occasion, after which the end is burned with a coal of fire; the child is then thrown into the

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water; if it rises to the surface and cries, it is taken out and cared for; if it sinks, there it remains, and is not even awarded an Indian burial. The affair being all over, she returns to her usual duties, just the same as if nothing had happened, so matter of fact are they in such matters.

During the time which I have lived here, I have never heard of one of these females dying from the effects of parturition. When any of them die, they are generally respectfully buried, but the hut and all the effects of the deceased are burned. Even the favorite horse of the deceased is sometimes killed and committed to the flames, to appease, as they say, their great grief.

MAMMALS.

Of the animal kingdom, we have a fair variety. The grizzly bear (ursus Americanus), the mountain sheep (ovis montana), the black bear (ursus arctus), the antelope (cervus medius), the deer (cervus alphus), the pole-cat (mephitis plutimus), the beaver (castor fiber), the wild-cat (felis catis), the otter (lutra vulgaris), the fox (canis vulpis), the badger (mules vulgaris), the hare (lepus timidus), the squirrel (sciurus Europeus), and cayotes innumerable abound here.

BIRDS.

The wild goose (anas Canadiensis), the mallard duck (anas boochus), the teal (anas querquedala), the curlew (numenius longirootris), the sage hen (testas uroparranus), the quail (tetrao coturnix), the turtle dove (columbana turtur), the wing dove (c. palumbus), the wild pigeon (c. megretum), the blue jay (cyanæcrax ultramanus), the pelican (alea), the swan (cygnus Americanus), the swallow (herundo urbica), the sparrow hawk (falco parvus), the mottled owl (scops Asio), the robin (turdus migratorius), the snow bird (junco hyemalis), the meadow lark (stumella magna), the raven (cervus carniverus), the crow (cervus Americanus), the English snipe, the turkey buzzard (cathartes aura), together with the mocking bird, the humming bird, and a large variety of small birds,

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of which I have never as yet seen a description. Road runners, or "runners of the road," abound here. They are a good sized bird and are very fleet. They live on reptiles principally, of which the rattlesnake appears to be their most luxurious dish, as they are frequently seen killing these dreaded monsters.

FISHES.

Our bay abounds with every variety of the most luxurious fish that are anywhere found in the ocean. I think the fish are better here than in San Francisco, and no one can say that is a bad fish market. The little mountain brooks are well filled with trout (gila elegans), mullet and minnows. In the winter season, whale are taken here "off the heads," in large numbers. Not less than one hundred thousand gallons of whale oil were made here last winter from this source.

REPTILES.

Of these, like in all warm countries, there are a great variety. But, fortunately, the only dangerous species that is found here is the rattlesnake, and they are fast disappearing. The chameleon, the horned toad, and several varieties of lizards are common. Scorpions are also plentiful, but they are not venomous, and their bite here is not considered more dangerous than the sting of a bee.

TREES.

Along the coast will be found the cottonwood, willow, aspen, oak, and two or three varieties of small hard-wood trees, the names of which I do not know. In the mountains and table-lands adjacent thereto, pine, fir, cedar and mountain laurel, with numerous other small trees, abound. The sugar pine is also found here, and that genus which General Fremont named pinus Colorado, from which the nut called by the natives of this country, "pinyou," is taken, is found here in great abundance. These nuts, with acorns, form a large por-

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tion of the food of the Indians. They also market many tons of them each year in Los Angeles and this place, where they are considered the same as filberts, peanuts or almonds. Many people think them a great luxury, and prefer them to any other kind of nuts.

GEOLOGY.

There can scarcely be a doubt that the whole of this country is a region of volcanic origin. In the desert, to the east of this place, there is at work, even to this day, volcanic action; hot water and mud are frequently ejected to the height of several feet; steam and other vapors are continually emitted from numerous springs in the ground. The mountains and ravines, especially where the rocks jut out and overhang, disclose strong evidence of igneous action, although the valleys and table lands are of a sedimentary formation. The alternate mountain ranges, plains, valleys and table lands into which the surface is divided are the results of these opposite agencies. One-fourth of these lands can be made, by irrigation, valuable for agricultural and horticultural purposes. One-half is as good natural grazing land as there is in the world, and is particularly adapted, both in climate, food and range, to the raising of sheep, leaving only one-fourth of the whole surface as waste land. This is a much smaller proportion than many other populous and prosperous countries have; and even large portions of this, which is now covered with a dense growth of chapparal, is composed of a rich and fertile soil, which could be reclaimed with much less labor than it takes in other countries to reclaim swamp and heavy timber tracts. The sterility of these lands is owing more to a want of moisture than poverty of soil. Experiments show that, with proper irrigation and cultivation, these lands are capable of growing excellent crops of cereals, as well as fine grapes and fruit. Thermal springs abound all over the country, and one of them, situated on Warren's rancho, is a great resort for inva-

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lids. Bathing in and drinking its waters is said to cure rheumatism in all its varied forms, and to cause sterile women to bear children. The country people religiously believe the latter statement, and, if one could rely upon reports, there are some well authenticated cases to prove it. Both useful and precious metals exist here in limited quantities. Indications of gold, silver, copper, lead, tin, iron, platina and coal have been found in different sections of the county, and some of the gold mines have been worked profitably. Granite, hornblende, decomposed quartz and red sandstone, with now and then a ledge of marble, are frequently found in the mountain districts. In many places along the coast millions of tons of pure white sand can be found, which will be valuable in time for building purposes, as it is the kind and quality sought after for making mortar.

METEOROLOGY AND CLIMATOLOGY.

Strictly speaking, we have but two seasons—the wet and the dry. Usually the wet season sets in about the twentieth of November and ends on or about the twentieth of April. This, in common parlance, is called the winter season, not because it is cold, but simply because it is wet, or a change from the summer season. During this time there usually falls about eight inches of rain; never any snow, except on the mountains, which are occasionally covered with it for a few days at a time. During the time that they are "snow-capped" the winds are very violent, cold and high, and in consequence, the changes in the temperature are sudden and disagreeable. The summer temperature is generally equable. The heat throughout the day is steady, seldom rising above eighty degrees, and the nights are always cool enough for winter bedding. Our climate along the coast is so equable that we seldom have a frost that does any damage, except, perhaps, now and then to the more tender plants. Vegetables and fruits ripen here without the least trouble or hindrance from this cause. In the mountains, of course, it is somewhat colder, but I believe it rarely freezes in the habitable altitudes. For health and

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pleasure there is probably not a better climate on the globe than we enjoy.

DISEASE.

For nearly two years the command stationed at this port has been so healthy that there has not been a death from disease. During this time one man was shot for mutiny, and another was accidently drowned while sailing in a small boat on the bay. The primary diseases of this locality are fevers and rheumatism. Of the former, we occasionally have all of the different types; but I think, from my experience, the bilious remittent type is more prevalent than any other. All fevers here are of an asthenic character, and, in most cases, readily, when attended to in time, yield to the usual remedies. Rheumatism seems to be indigenous to the soil, every one complaining of it, more or less; probably owing to the humidity of the atmosphere, along the coast, that causes this disease. However it is seldom fatal, and usually quickly yields to ordinary treatment. Wearing flannel next to the skin, the year around, is a sure prophylactic. During the fall months, when fruit is largely eaten by the population of this county, diarrhœa and dysentery prevail; but it is generally of a mild type, and readily succumbs to treatment. Of the whole number of cases treated, more than two-thirds of them have been of a venereal character. This loathsome and disgusting disease is rendered prevalent by the pernicious intercourse of the men with the squaws who infest the town and camp.

Syphilis and gonorrhœa, contracted from these low Indian squaws, are always of the most virulent type, particularly gonorrhœa, which sometimes defies all treatment for months. I have treated twelve cases of syphilis with podophyllin, in the place of protiodide of mercury. In one case, salivation was produced. Seven of the twelve cases, including the one in which salivation was effected, yielded readily to the remedy, and apparently made good and satisfactory cures. The other five were not promptly affected by it, and I resorted to the old

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mercurial treatment for a cure. Mercury, used judiciously, has never, as yet, failed in my hands, of curing the worst cases, while podophyllin frequently has. I do not think that podophyllin can be relied on as a specific in the disease. I give one-fourth of a grain twice a day, for three weeks; if, at the end of that time, no perceptible effect has been produced, I change to the old mercurial treatment. The last-mentioned diseases, together with intemperance, are the bane of the soldier's life at this post, as there is nothing else in this locality to cause sickness among them. Variola paid us a special visit last spring. Owing to good police arrangements, however, no cases of it got into town or camp. Many of the country people and Indians, living in some of the distant localities of this county, died with it, but with the advent of summer it disappeared.

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MEDICAL TOPOGRAPHY OF SANTA BARBARA.

By M. H. BRIGGS, M. D.

I beg to make a few remarks in regard to the climate of that portion of the county of Santa Barbara which consists of a narrow strip of land lying on the coast, beginning at Point Conception and ending at Point San Buenaventura, a distance of about sixty miles from west to east, bounded on the north by a high range of mountains called the Coast Range, and on the south by the ocean. The width of this strip is from two to four miles; about two-thirds of it is undulating or rolling land, the rest is in level spots, and all of the richest soil.

The principal features of this region consist in: first, the almost due easterly and westerly direction of its coast; second, the unbroken range of mountains, about three thousand feet high, which form a perfect barrier to, and protection from the severe north and northeast winds which are so annoying and detrimental to health elsewhere; and third, in a chain of islands which lies along this favored portion of the coast to protect it from the cold ocean fogs that roll in so uninterruptedly in other parts. These three peculiarities combined give that exceptional climate with which Santa Barbara is blessed, its equal not being found on the Pacific coast, at least not outside of the tropics. The channel of Santa Barbara lies between these islands and the main land, and extends all the way from Point Conception to San Buenaventura—every one upon entering it, in coming down the coast especially, remarks the instant change of temperature after rounding the point,

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and sometimes suddenly emerging from a thick driving fog and finding himself under a bright blue sky, with warm, pleasant weather, and to make the transition more complete, feels himself gliding along in smooth water instead of plunging through a heavy sea. Five minutes after passing the lighthouse on the point, all the wretched sea-sick passengers on the steamer crawl out of their berths and go on deck to enjoy the delightful change.

Our prevailing winds are west and north—westerly during the summer or dry months, and southeasterly during the winter or wet months. The wet season extends from about the middle of December to the end of March, with a rainfall of from ten to eighteen or twenty inches. The average temperature of summer is below seventy degrees, and about fifty-three degrees during winter; frost is rarely seen, and sudden great changes in temperature never felt. It is considered exceedingly warm should the thermometer rise to seventy-eight or eighty degrees at noon, and it hardly ever exceeds this degree, unless caused by fires in the neighboring mountains, which now and then occur during the fall of the year when everything is dry.

The most remarkable fact in regard to this region is the seeming impossibility for epidemics to visit it. The small pox has ravaged the whole country three or four times since 1843; it has been singularly virulent in San Luis Obispo, the first town north of us, and also in Los Angeles, which lies in the next county south. During the prevalence of the epidemic, persons have come from these neighboring towns with the seeds of the disease and have died in Santa Barbara within a few days of arriving, but some antiseptic property in the climate has prevented contagion, and it has never spread. Scarlatina and diptheria are unknown here; there are some instances of the measles having been brought here, and perhaps run in a very mild form through some of the members of the family first bringing the disease, but it has never spread as an epidemic.

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There are no malarious fevers—persons who come here afflicted with fever and ague, rarely have more than two or three attacks; they soon become well, often even without the use of antiperiodics—the climate seems sufficient to cure the malady. During a residence of twenty years I have only seen one case of membranous croup and heard of two others. There is no disease endemic to Santa Barbara, nothing but what can usually be referred, either directly or indirectly, to some indiscretion in eating or drinking or from unreasonable exposure.

Many consumptives visit this part of the country and derive much benefit from its equable climate, which makes it especially appropriate to this class of patients, who besides find much attraction in the pleasant drives along the hard sea beach, or in the healthful rides and walks up the many romantic little dells or valleys, and over the low rolling hills covered here and there with clumps of evergreen, oak, sycamore, cottonwood, laurel, and alder. Game is plentiful. We have good fishing in the mountain streams and in the channel, and every other attraction, that one of these days will make Santa Barbara the favorite resort of invalids, convalescents, and all those who desire to pass a quiet, peaceful and healthy life.

I bring this slight sketch of Santa Barbara before the State Medical Association, suggestively, in case the question should ever be mooted as to the most proper place for the establishment of a State hospital or sanatorium.

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Statistical table of the births, deaths and marriages registered at the Mission of Santa Barbara, from its foundation on 9th April, 1782, to the end of 1870, a period of over eighty-eight years.

Date.	Births.	Deaths.	Marriages.
From 1782 to end of 1799.	194	74	41
1800	19	6	2
1801	22	15	3
1802	18	4	6
1803	20	12	2
1804	9	1	2
1805	17	4	3
1806	10	6	1
1807	11	4	2
1808	22	3	1
1809	13	9	7
1810	23	5	4
1811	18	10	8
1812	24	11	6
1813	18	6	1
1814	23	8	3
1815	16	5	
1816	23	12	4
1817	22	5	5
1818	27	6	1
1819	11	3	3
1820	24	8	2
1821	20	10	6
1822	28	9	8
1823	24	9	4
1824	27	11	6
1825	31	6	11
1826	38	2	5
1827	38	6	8
1828	23	4	1
1829	44	7	2
1830	33	14	6
1831	45	8	9
1832	32	11	10
1833	59	11	8

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Date.	Births.	Deaths.	Marriages.
1834	63	12	9
1835	47	12	6
1836	60	9	5
1837	55	13	3
1838	55	25	7
1839	59	19	7
1840	47	13	5
1841	62	9	13
1842	50	14	11
1843	70	12	7
1844	56	20	3
1845	61	14	13
1846	72	16	19
1847	70	20	5
1848	63	25	11
1849	64	43	9
1850	67	20	25
1851	67	28	21
1852	81	33	25
1853	108	35	24
1854	90	46	19
1855	106	47	21
1856	107	36	15
1857	60	31	13
1858	116	42	11
1859	94	57	19
1860	127	49	18
1861	94	68	12
1862	120	43	16
1863	114	41	13
1864	105	54	10
1865	78	40	13
1866	108	52	13
1867	105	41	17
1868	108	39	23
1869	117	70	32
1870	138	47	23
Total	4,090	1,520	707

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OVARIOTOMY.

By J. H. WYTHE, M. D.

[Late Surgeon United States Volunteers.]

The subject of Ovariotomy, assigned me by the committee, is one of interest to the entire medical profession. For this interest there are several reasons. First, the operation is associated with the history of American surgery, having been originally performed by Dr. McDowell, of Kentucky, in 1809. For many years such an operation was regarded as wholly unjustifiable, but is now recognized not only as legitimate, but in many cases, as imperatively necessary.

Then, the gravity of the operation is not without its influence. There is a romantic charm in operations of magnitude, similar to that of the post of honor in military achievements, rendering a careful prudence necessary. A conscientious surgeon is obliged to resist the tendency to be bold and heroic, and in consequence may sometimes decline a very necessary operation, so difficult is it to steer between Scylla and Charybdis!

Ovariotomy is doubtless one of the most important resources of surgical art, requiring not only familiarity with pathological appearances, and skill in the use of the knife, but also presence of mind and facility to meet emergencies. The operation is far from being stereotyped. The conditions vary so much that a surgeon cannot tell, before making an incision through the abdominal wall, what peculiarities he may meet with. He must be ready for every possible contingency.

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Adhesions may be so extensive and firm as to require an abandonment of the operation after it is begun. The contents of the cyst may be semi-solid and require special means for evacuation before the tumor can be reduced to a size small enough to pass through the incision, or the incision may need to be enlarged even from the ensiform cartilage to the os pubis. The surgeon may succeed in keeping the peritoneal cavity free from blood and effused fluids, or the contrary may be the case. The pedical of the tumor may be small and easily secured, or it may involve the entire broad ligaments enlarged by the diseased processes. Bloodvessels may require ligation in difficult and unusual places, or other complications may arise which no pathological or surgical experience can foresee.

Despite of all its difficulties the success of ovariotomy has surpassed all expectation. It would seem as if the peritonæum becomes insensitive from the pressure of the tumor, rendering it less liable to inflammation than under other conditions. Statistics furnished by eminent operators, show the fatality to be as one to three of all the cases—a result which compares favorably with other large operations. If it were not so often made a last resort, ovariotomy would show still more favorable statistics. In my own practice I have seen twelve cases, three of whom died without an operation. Of the nine cases operated on, seven recovered. In this enumeration I include three successful operations in California; the case of Mrs. Swan in San Francisco, in June, 1865, who has since given birth to two children, a boy and a girl; Mrs. King's case, in Sacramento, April, 1871; and Dr. Tyrrell's operation on Mrs. English, Sacramento, July 1st, 1871, in which I assisted. These have been fully reported, and it is unnecessary to give them here.

The conditions requiring ovariotomy should be carefully studied. An ovarian tumor may remain for years, or during life, and call for no surgical interference, or it may increase in a few months to such a size as to require speedy removal. Many tumors, apparently of the ovary, may be classed as

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phantom tumors. Such are often discussed by ordinary ointments, etc., or they disappear of their own accord. I have seen several of these during the past twenty years.

Other tumors are distinctly fibrous, grow slowly and may not set up grave constitutional symptoms for years, although they are not without risk. A case of this kind in my practice, after twelve years of quiet growth, until it had attained a diameter of about six inches, set up peritoneal inflammation which destroyed the patient. Adhesions existed to such an extent that an operation was out of the question.

Ovariotomy is required for what is called ovarian dropsy, or cystic ovarian tumor, when the symptoms are urgent and the tumor large. This condition of the ovary is characterized by the formation of cysts, generally from an enlargement of a graefian vesicle. Such cysts may be unilocular or simple sacs, or they may be multilocular, or complicated with fibrous tumors or other diseased states of the ovary. The contents of the cyst may be a limpid or straw-colored fluid, highly albuminous, or it may be more or less opaque, gelatinous, brown, greenish, or mixed with pus, oily matter, cholesterine, etc. The contents of individual cysts in a multilocular tumor may also vary exceedingly. Some of these cysts contain fat, epidermis, brain, teeth, or bone. Respecting the formation of these latter products various opinions have been given. Billroth considers it probable that they are aborted fœtuses from an incomplete ovarian pregnancy. Jones and Sieveking see in them evidences of morbid germination not referable to impregnation. Paget attributes their formation to the lining membrane, which has the structure and productive properties of the skin, hence he calls them cutaneous proliferous cysts. Such cysts have been found in various organs besides the ovaries, showing that impregnation is not essential to their production. They have been met with in the subcutaneous tissue, in the brain, in the scalp, and teeth-bearing cysts in the jaws, particularly in the antrum. In the anterior mediastinum of a woman twenty-one years old, a tumor contained skin and

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fat, sebaceous matter, and two pieces of bone in which seven well formed teeth were imbedded.

Two cases of ovarian tumors under my own observation, contained bone and teeth, the last of which was typical and instructive. It was a unilocular or simple cyst, containing about five gallons of albuminous fluid mixed with pus. After ovariotomy an examination of the cyst showed that it was in a state of transition to a multilocular form. The lining membrane of the tumor was studded with numerous follicles of various sizes. Two or three of the depressions were so large as to be entitled to the name of separate cysts. Many of the smaller follicles contained teeth or the pulp of teeth in various stages of development. In some, the pulp was transparent and gelatinous, in others white and opaque. Thirteen of the teeth were fully formed, and projected towards the cavity of the cyst. In addition, several small, irregular pieces of bone were found imbedded just below the lining tissue.

Some unilocular cysts may be obliterated by iodine injections, or other means, producing inflammatory adhesion of the lining membrane. A case of this kind occurred in May, 1860, in which the ovarian tumor, holding several gallons of albuminous fluid, was uniformly adherent to the abdominal walls and viscera, rendering its removal impossible. Injections of tincture of iodine produced complete adhesion of the cystic walls, with no constitutional disturbance, and the patient fully recovered.

The diagnosis of a cystic ovarian tumor is not easy. The best surgeons have sometimes been mistaken in such cases. It has been confounded with pregnancy, with ascites, and with uterine tumors. The chief points to be observed are the irregular or general one-sided growth of ovarian disease, and invariable dulness on percussion over the umbilical region, whether the patient sits up or lies down. In ascites the hydrostatic line, or surface of the dropsical effusion, shifts its position with the position of the patient, and a tympanitic sound is usually given by percussion at the highest point. The small or

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natural size of the uterus, and its general mobility, as ascertained by the sound, will generally distinguish ovarian from uterine tumors. The strongly albuminous character, color, etc., of the fluid evacuated by tapping, will also furnish information. The fluid should always be submitted to microscopic examination. As to the mode of operating in ovariotomy it is unnecessary to enlarge, as this has been so often repeated in surgical text-books and reports of cases. Whatever peculiarities be adopted respecting the operation, I am convinced that a successful issue will depend in a great degree, next to a favorable state of the patient's constitution, upon the most untiring watchfulness during the after-treatment. The valuable disinfectants used in modern surgery, particularly carbolic acid solution, contribute largely to success by obviating the tendency to pyæmia. Next to the discovery of anæsthetics, this agent is among the most useful contributions of science for the relief of human suffering.

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TYPHOID FEVER.

TREATMENT BY MINERAL ACIDS.

By R. H. PLUMMER, M. D., of Dixon, Solano County.

It has fallen to my lot to treat, annually, a number of cases of typhoid fever, and since this is a malady that all physicians encounter, I have deemed it an appropriate subject to present to the society. The use of mineral acids in the treatment of typhoid fever has been advocated by Murchison, Richardson and many other eminent physicians; one preferring hydrochloric, another phosphoric, another nitric, and another sulphuric acid. My own experience corresponds with that of that eminent practitioner Austin Flint, of New York, in giving the preference to dilute sulphic acid. The other mineral acids I have used to a limited extent, but they have failed to meet my expectations as fully as the sulphuric acid.

The exact *modus operandi* of the acid treatment has not been positively demonstrated, but is supposed to correct the excessive alkalinity of the blood. My experience leads me to believe that under the acid treatment there is a lower temperature of the body, a smaller proportion of serious intestinal complication and a lower percentage of brain disorders. These conclusions are drawn from the history of thirty-seven cases of well marked typhoid fever occurring in my practice during the last four years, only one of which proved fatal. In no instance were head symptoms developed after the treat-

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ment was commenced, and in those cases that had progressed to the second or third week before I was called, the symptoms were all ameliorated within thirty-six hours after the commencement of the treatment, save in the one case which proved fatal. But while I place great reliance in the curative influence of the acids, I do not lose sight of other material points in the treatment, among which nutrition is the most important. Beef tea or beef essence, soups, milk, eggs, etc., are the most nourishing diet, and form the least excrementitious matter. Notwithstanding patients complain that "all food is unpalatable," I insist upon their taking a reasonable quantity of the above about four times a day.

Professor George B. Wood attributes to the oil of turpentine some curative influence upon the intestinal lesions, but I believe it is most useful when administered to prevent, rather than to cure, ulcerations. Where iliocæcal gurgling, tympernites and tenderness make their advent, I deem it prudent to commence the administration of turpentine immediately.

Other important points in the treatment of typhoid fever are free ventilation, equal temperature of the sick apartment, frequent ablutions, and change of body and bed linen every day or two. It has been suggested that many of the brain complications are due to uræmia. That it sometimes plays an important part I do not doubt. When the secretion of the kidneys is insufficient in quantity and of high specific gravity, irritability of the bladder, with frequent desire to micturate, spirits of nitre and flaxseed tea will probably be beneficial. These indications should always be closely watched for and early combatted. In short, the successful treatment of severe cases of typhoid fever depends on the close observance of every symptom.

CASES.

Jock, aged fourteen, race rider. Saw him first about 7 o'clock P. M., August 20th, 1868. Had been ill fourteen days and entirely irrational for twenty-four hours; constantly talking to or about his horse, grasping at invisible objects and

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picking at the bedclothes. When asked what he was looking at so intently on the ceiling, he replied, "Oh, nothing but those boys standing on their heads up there!" There was slight subsultus, and slight twitching of the facial muscles; pulse one hundred and thirty-eight, tongue round and pinched, dry and coated, and fiery red at the tip and edges; when protruded it is hesitatingly, and he apparently forgets to retract it; breath offensive; bowels moved unconsciously in the bed, the dejections being thin, ochery and offensive; asks for nothing to eat or drink, but will take anything given him; passed no water for twenty-four hours; skin hot and dry, and rose-colored spots in abundance on the body. I introduced the catheter and drew off about a pint of urine; ordered dil. sulph. acid. gtts. xv in sweetened water every four hours; spts. nit. dulc. in flaxseed tea; opium, acetate of lead, and gallic acid āā grs. j. every four hours till the bowels were controlled; sponge bathing, two or three times in the afternoon, with vinegar and water—one part of the former to two of the latter; nourishment in the form of beef essence, milk and eggs, to be administered every six hours. At 7 A. M. next day I saw him again; pulse one hundred and thirty; bowels moved only twice; slept a little towards morning, but has passed no water; I introduced the catheter and drew off about a teacupful of urine; still irrational, but less talkative. Seven o'clock P. M. same day; has slept occasionally during the day; pulse one hundred and twenty-five; tongue not so dry and pinched, nor so red at the tip and edges; bowels not moved since morning; passed no water; when aroused appears to be rational for a moment, but immediately wanders again; drew off the water and continued the treatment. At 7 A. M. next day found my patient entirely rational, resting well; bowels not moved; passed water freely; pulse one hundred and twenty; tongue cleaning off slowly, and when protuded appears broad and flat; skin moist. Ordered a little brandy in the form of egg-nog; convalescence progressed uninterrupt-

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edly from this date. Another case in the house at the same time, though less severe, made an equally rapid recovery.

J. B——, aged thirty-one years, farmer. Saw him first November 16th, 1869; delicate constitution; had been ill sixteen days and irrational for twenty hours, though he could still be aroused sufficiently to answer one or two questions correctly; pulse, one hundred and twenty-five; tongue thickly coated, parched and red at the tip; declines to eat; has had diarrhœa for several days, discharges being ochery and offensive; urine scanty, high colored, and of high specific gravity, and he complains of irritability about the neck of the bladder, with frequent desire to micturate; rose-colored spots numerous on the body and superior extremities. The same treatment in the main was adopted as in the preceding case, but with no material change in the condition of the patient—the pulse ranging from one hundred and twenty to one hundred and twenty-five, until the morning of the fifth day of the treatment, being the twenty-first day of the disease, when the pulse was one hundred and twenty-eight, small and feeble; delirium slightly increasing. About 9 P. M. of the same day I saw him again, when I found him in a state of deep coma, breathing stertorous; pulse one hundred and thirty-five, but not quite so small as in the morning; the body bathed in a profuse clammy perspiration; I ordered brandy freely, hot mustard foot baths, hot sponge baths with the addition of mustard and capsicum to the vinegar and water; dry frictions; mustard draughts and blisters to the abdomen and extremities. Drs. J. S. Cunningham of Vacaville, and S. D. Campbell of Suisun, were called in consultation; the treatment was approved with the substitution of aromatic sulph. for dil. sulph., with the addition of aromat. spts. of ammonia; the urine was drawn off by the catheter. The next evening, twenty-four hours from the time he became comatose, the patient again became conscious and semi-rational, and remained in this condition, (the pulse never being more than one hundred and twenty-five), until four days later, being the twenty-sixth day of the disease.

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On that morning he was seen by Dr. Cunningham and myself; pulse one hundred and sixteen, and condition slightly improved; soon after, however, he became restless—the bowels began to run off, and pulse became smaller and more frequent. At 6 P. M. we met again and found him almost unconscious; pulse extremely rapid; bowels had moved five or six times since morning; the astringent pills had not been given as directed, and, contrary to particular directions, he had been lifted from the bed to the chamber, at his own request, and just returned to the bed as we came in. He continued to sink rapidly, and died at 2 A. M. next morning. In this case the violence of the disease seemed to be exerted on the nervous system.

F——, aged 52, farmer. I was called July 7th, 1870, to reduce a fractured leg. He had fallen from a wagon, and the foot catching between the spokes of the wheel, produced an oblique fracture of the external malleolus. I reduced the fracture, and he was seemingly doing well until the tenth day, when he became "sick of a fever," evidently typhoid. I placed him on the acid treatment. About five days after he was attacked with diptheria, which, for two days, was so severe that deglution was extremely difficult. This, however, yielded to treatment, and the fever progressed, with the development of the usual symptoms—the most prominent being those of intestinal complication. Hot applications, by means of hops steeped in vinegar and water, with the addition of a little turpentine, were made to the abdomen from time to time, with apparent relief. Oil of turpentine was administered internally, suspended in emulsion, with eggs and milk and nutmeg, every four hours. On the seventeenth day of the disease he had a severe attack of hemorrhage from the bowels, with diarrhœa; repeated doses of opium, acetate of lead and gallic acid, ää gr. j. were given. During the next six days he had two other attacks of hemorrhage, though less severe than the first; a liberal supply of brandy was now added to the treatment, and from the twenty-eighth day of the fever the

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patient made a fair recovery. He got up with non-union of the fracture, which, however, subsequently united. In this case the violence of the disease seemed to be spent on the abdominal organs, there being evidently ulceration of some of Peyer's patches, whence the hemorrhage proceeded.

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ON QUARANTINE.

By W. T. WYTHE, M. D., of Sacramento.

At the present day, many opinions prevail in regard to the utility of quarantine regulations. Men who have travelled much by sea, remembering how they have been fumigated with vile smelling stuffs, and the drenchings with vinegar and salt water they have endured in the quarantine of some semi-civilized nation, declare the whole system vexatious and unnecessary, and that it fails to prevent epidemic diseases. They shudder at the recollections of the lazar-house, and denounce the plan that imprisons sick persons in places where the air is full of the odor of pestilence, and the delirium of the dying never ceases. They say that lazarettos, even when well managed, become centers from which infection radiates, and therefore are worse than useless.

On the other hand, in all ages, certain diseases have been recognized as contagious, and quarantine regulations have been chiefly relied upon for their prevention.

A history of the origin and progress of quarantine would fill a large volume, but in order to fully understand the subject, it will be necessary to refer briefly to the steps by which it has attained its present proportions.

The present system of quarantine is the result of slow development. Like many other institutions descended to us from the middle ages, quarantine is encumbered with useless and sometimes absurd theories. In practice, it frequently fails in its intended effect, because of a slavish adherence to obsolete

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and incorrect ideas of the origin and spread of epidemics. Quarantine regulations are the result of the experience of many men, in various places and in different circumstances, through centuries, and therefore are entitled to great respect. But it cannot be denied, that while history shows an occasional exemption from pestilence, due apparently to the enforcement of the principle of non-intercourse between infected persons and the well, it more frequently shows that quarantine was ineffectual in arresting the cause of an epidemic. It is but just, however, to remark, that infectiveness in practice is not proof that the principle of isolation is incorrect; for the reason, that, through carelessness, fraud or ignorance, the regulations may have been broken in every case, and by this infraction the infection spread.

A careful consideration of the subject will prove that when intercourse is so general and rapid as at the present time, it is unsafe to trust for safety to quarantine alone—that quarantine regulations are of great value when associated with public and private sanitary measures—that they should be extended so as to supervise, as far as practicable, travel on land as well as on sea, and that with public and private hygiene, quarantine should be under the general control of a State or National Board of Health.

The earliest reference to quarantine is found in the laws of Moses, regulating the treatment of those sick with the plague, where it is directed that they who are afflicted shall be separated from the people, and the disease studied by the priest, who shall decide in regard to its character. In Numbers, xvii, 47, fumigations appear to have been used to check the course of a plague. There is no doubt that men were taught, in the most remote ages, by sad experience, that the contact of well persons with those sick of certain diseases, was often followed by an attack of the same disorder, and they endeavored to prevent contagion by separating the sick from the well. Thus we find in Egypt, long before the establishment of any regular quarantine, during the prevalence of pestilence, the Coptic

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monks closing their convent gates and refusing to hold communication with the people, and the petty despots of the eastern world frequently forbidding travellers from places where the plague raged, entering their cities, and sometimes placing a guard of soldiers over them so that they should not communicate with the people. During the middle ages, while the crusaders were waging war for the recovery of Palestine, returning pilgrims often carried the plague from the east to places formerly exempt, and it was observed that those who avoided the sick generally escaped infection.

The first attempt to establish regular quarantine, was made in 1374, by Count Bernardo, of Reggio, who published a law, directing that every one who had the plague should be taken from the city into the fields, there to die or recover. It forbid all communication between the attendents of the sick and the inhabitants of the city, under penalty of death, until the lapse of eighteen days since they had been with the sick. Commissioners were appointed to examine all cases of sickness, thought to be plague, and to enforce the law. All persons from infected places were forbidden to enter the city, and the goods of those who were thought to have imported the pestilence, were confiscated. In the fourteenth century there was but little intercourse between various nations. Plague was raging throughout Europe, with a violence hitherto unknown, destroying thousands of the human race. The regulations of Bernardo seemed the only plan that promised safety, and similar laws were soon adopted by many Italian cities. In 1348, at Venice, the great portal between the eastern and western worlds, was established the first board of health, and a hospital erected for the treatment of the plague stricken. One hundred years after, the senate adopted a quarantine code, and all ships were obliged to remain at the lazaretto for a number of days, or until all contageous disease had disappeared. In 1467 Genoa adopted similar laws and built a lazaretto. The Turks are thought to have originated bills of health, which first

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appear to have been given at Aleppo, in the sixteenth century.

The first quarantine in France was established at Marseilles, and a royal proclamation in 1720 ordered that all vessels from infected ports should be sent either to Marseilles or Toulon and there undergo quarantine. This order continued in force, to the great injury of commerce, until 1820, when the present code was adopted. In Holland, quarantine laws were more strictly enforced than elsewhere in Europe, and all possible precautions were taken to perfect the isolation of the sick and to destroy or purify everything that might propagate the disease, and, says Dr. Mead, "these regulations were so carried out, that they were generally successful in arresting the plague."

England passed quarantine laws somewhat later than the continental states of Europe. In the fourteenth century a plague, which is supposed to have originated in China, swept over France and entered England. At Bristol, then the most important harbor of Great Britain, efforts were made to keep it out of the town by preventing all intercourse with infected places, but the attempt was a failure. James I. ordered all persons who had cases of plague in their house, to keep in doors; and in 1665, during the great plague of London, all houses where the plague was, were marked with a red cross, and the inscription "Lord have mercy on us," that people might avoid the danger. The first quarantine bill passed the House of Commons in 1710, and was put in operation two days after its passage, through fear of an epidemic then raging on the Baltic coast. In the reign of George I., this law was repealed and a bill passed Parliament in 1720 "to hinder the spread of infection." This, among other provisions, gave the King power to prohibit commerce with any infected country for the space of one year. In its general provisions it was similar to quarantine regulations on the continent, but differed in this, that when a vessel arrived from a place where the plague was raging, both ship and cargo were burned. These

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laws were strictly enforced, but, because of their injurious effect on commerce and their harshness, were soon repealed. The present regulations were adopted in 1825.

Dr. Horner, in describing his quarantine experience in Spain, says, "all ships sailing to any port of Spain, are obliged to stop at Port Mahon, no matter how far it may take them out of their course. A lazaretto has been established here covering twenty-five acres of land. Ships arriving from suspected places were obliged to remain in quarantine twenty days and have their cargoes taken out and purified, and all vessels from ports known to be infected were detained until the end of the pest was proclaimed. Every four days the ship was washed and fumigated, and the sails and the clothes of crew and passengers were immersed in salt water for twenty-four hours. Besides this, the cargo and all the passengers were fumigated on six consecutive days, and kept in quarantine for forty days. Letters and newspapers were cut from the mail bags, perforated, and then having been fumigated and immersed in vinegar, were returned with long iron tongs."

In America, quarantine laws were enforced at an early date. Gov. Winthrop describes in his diary, an epidemic which prevailed among the natives in 1608, resembling yellow fever; and there is no doubt that a contagious disease was imported by emigration in 1618. In 1700, after Philadelphia, then a town of four thousand people, had suffered greatly from a fever, said to have been introduced from the West Indies, Penn issued an order forbidding all ships having sickness on board, entering the river, or coming within one mile of the shore, under penalty of a fine of £100, until they had been cleaned and fumigated with tobacco. A lazaretto was established in 1743, and in 1803 a board of health and quarantine. From June to October, all vessels must anchor near the lazaretto and undergo an examination by the health officer before landing either cargo or passengers. If "quarantined," it must not exceed twenty days.

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Massachusetts passed a law in 1701, to prevent the importation of small-pox, and soon after a hospital was established in Boston harbor. In 1799 a board of health was established. Sometime in 1836 the quarantine was placed under the control of the mayor and aldermen. In 1843 the council reported in favor of removing the hospital to Deer Island, and in their report say "the doctrine of contagion has changed so, lately, that almost all quarantine regulations have been abandoned, and there is no apprehension felt in regard to epidemics. But your committee think it not proper to give up all quarantine regulations." In 1853, all ships from places where yellow fever was prevailing were quarantined until frost appeared. Since that time, as far as I can learn, quarantine has been enforced principally in regard to immigrant ships.

New York, which has perhaps the most perfect quarantine system on the continent, passed a law in 1758, detaining at Bedloe's island, all ships having yellow fever or small-pox on board. In 1799, land was purchased on Staten Island for a hospital. All vessels entering the harbor are examined, and if found to be from places where epidemics are raging, or to have on board cases of contagious disease, are kept in quarantine thirty days. The crew and passengers are detained at least fifteen days after the disappearance of the last case of disease. Meanwhile the usual sanitary measures are adopted.

A health office and quarantine was first established at New Orleans in 1818, but the law was repealed during the next year. A similar law was again passed in 1821, but through the influence of public clamor, and the opinion of physicians, that yellow fever, which it was intended chiefly to prevent, originated in local causes, it was repealed. From this time New Orleans suffered every year, to some extent, from yellow fever, and after the severe epidemics of 1853, 1854 and 1855, quarantine laws were again passed. In 1863 and 1864 these regulations were strictly enforced, in connection with sanitary measures, and were successful in arresting the epidemic.

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The quarantine laws of San Francisco have been apparently modelled after those of New York, and are of recent origin.

Having glanced as briefly as possible at the history of the rise of quarantine systems, it becomes necessary to examine what need there may be for isolation, and how successful it has been in preventing the spread of contagious diseases. Without discussing the question of contagion, it is sufficient to say that any epidemic disease that destroys human lives, as cholera and yellow fever do, is a fit subject for quarantine, until its non-contagious character is fully demonstrated.

In examining the success of quarantine, I shall refer especially to cholera and yellow fever.

From 1700 to 1794, Philadelphia suffered from four epidemics of yellow fever, during which time there was little effort at the enforcement of quarantine. Quarentine laws were then put in operation, and during the following twenty-five years yellow fever appeared not less than eight times, to the great terror of the people, until Dr. Rush pointed out the necessity of hygienic measures besides quarantine. Yellow fever has prevailed at New Orleans and along the Mississippi river in spite of the most rigid quarantine, almost yearly, and it was not until 1863, and under martial law, that the people discovered that it was possible to prevent it by the addition of sanitary measures to quarantine, a fact their physicians had told them year after year in vain. Dr. Gurthrie of Memphis says that in 1854, forty cases of yellow fever were brought to that city from New Orleans, but owing to the enforcement of quarantine regulations, the disease did not spread at that time. When the epidemic entered the city its origin was clearly traced to the steamer Henry Huntly, which had come up the river from New Orleans, loaded with railroad iron. This boat "tied up" to another steamer, the "Ingomar," when, after a few days, yellow fever appeared on both boats. The Henry Huntly then returned to New Orleans, and was gone thirteen days, during which time no more cases occured on the Ingomar. On her return the Henry Huntly tied up again to the

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Ingomar, and the disease once more appeared and destroyed several lives on both boats. The boat then dropped down the river a mile and a half and tied up at the bank, but the disease increased, and spreading to the shore became general in a short time throughout the city.

The epidemic at Hilton Head, South Carolina, in 1862, by which Gov. Mitchell lost his life, was briefly as follows:

The steamer Delaware, on coast *service*, made a voyage to St. Augustine and the Dry Tortugas. Returning, the vessel touched at Key West, where yellow fever was raging, August 12th, and arrived at Hilton Head, August 26th. The vessel was detained at quarantine for a day or two, but there appearing no cases of yellow fever on board, was permitted to come up to the wharf and discharge a number of tents brought from Key West. A few days after landing the tents, cases of fever occurred both on shipboard and on shore, among the men who had handled the tents, and soon became general. The epidemic raged for three months and destroyed many lives. The opinion prevailed at Hilton Head, that the cases of disease could all be traced to contagion originating in the tents brought from Key West. Mobile enforced quarantine regulations rigidly, but was not successful in preventing epidemics of yellow fever. At Tortosa, in Spain, quarantine was established, but, although well enforced, failed to prevent the and spread of the pestilence. In 1848 and 1849, Brazil suffered severely in spite of strict quarantine. Cuba has never been free from the disease; and in 1865 it extended as far north as Cardiff, in Scotland.

The failure of quarantine measures to prevent Asiatic cholera is well known. Asia, Europe and America have each felt, in their turn, this dreadful scourge. Neither do natural obstructions—high mountains nor deep seas—check its course. A few places are said to have escaped by enforcing strict quarantine. During the epidemics of 1837 and 1849, both the Islands of Elba and of Man were untouched. Algeria is said to have escaped in 1867, although the ships in quarantine at Algiers suffered severely. Sicily was exempt during several

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epidemics on the neighboring main land, and is supposed to have finally received the pest, by permitting troops to land without the usual precautions.

Because of the many failures to arrest the progress of the cholera and yellow fever, and the uncertainty of the origin and nature of the contagious element of these diseases (some, indeed, denying the existence of such an element), many physicians have lost all faith in the usefulness of quarantine systems. Dr. Rush, many years ago, said that "Quarantine originated in error, and is kept up by a supreme faith in the opinions of our ancestors;" and further, "Quarantine never prevented any disease, except small-pox." Maclean and many others assert that the system has no advantages to counterbalance the mischief it does society, and Tanner says: "It is to be hoped that the day is not far distant when sanitary works will be substituted for quarantine regulations." Notwithstanding these opinions, quarantine still exists, bills of health are given, and some diseases are treated as though they were known to be propagated by the intercourse of the sick with the well and by fomites. This is right; for it is always wise, in case of doubt, to select the side of safety. To treat cholera and yellow fever as if positively contagious, can do no harm, while to call a contagious disease non-contagious would be a fatal error.

Absolute non-intercourse between the sick and their attendants and the well seems to be essential to the success of quarantine regulations; and although this may be accomplished on islands and in a few towns remote from lines of travel, it is, as a rule, impossible. Yet, however great may be the imperfections of quarantine systems and the difficulty of enforcing proper regulations, there is no argument against the need of adopting every precaution and guarding every door by which epidemics may enter a country.

While towns on the coast are usually the first to suffer from epidemics, it is by no means always the case, and a quarantine confined to a few sea coast cities is insufficient to protect a

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country of so vast extent as ours. For example, who can say when the first case of cholera appeared in California? Whether it first showed itself in San Francisco or Sacramento? Was the late epidemic of small-pox brought into California by sea or across the mountains by railroad? If it is evident that the only safe plan is to treat these diseases as though we were sure of their contagiousness, and knowing that by the great rapidity of railway travel and the general intercourse of the people diseases of this character are as liable to be propagated by land travel as by sea, it is evident that there exists the same necessity for quarantine regulations on land as at seaports.

While the value of public and private hygienic measures in the prevention of these diseases cannot be over estimated, yet without properly guarding the approaches, sanitary measures will often fail. Many a pretty village whose surroundings were most favorable to health has been depopulated by epidemic diseases. On the other hand, the futile efforts of quarantine, unaided by hygienic measures, to prevent pestilence has often been seen. They should never be separated, but should form the parts of the great science of public health.

The whole system of quarantine and public hygiene should be under the general control of the State Board of Health, so that in times of epidemics the endeavor to prevent diseases may be as efficient as possible, with the least injury to commerce. The history of yellow fever in New Orleans proves conclusively that proper quarantine and sanitary measures combined and enforced under one management can prevent the spread of an epidemic otherwise uncontrolable. The history of the cholera in Algeria, in 1867, proves the same in regard to that disease.

The topography of California is such that quarantine regulations, if ever efficient in preventing or aiding to prevent contagious diseases, can be here brought to their perfection. We are as completely isolated as if we were surrounded by the sea. On the coast, there is but one port for foreign

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commerce. On the east, are impassable mountains, having but one gate through which travel enters the country—by the railroad. Few people enter California on the south and north, and these through passes in the mountains. Therefore, when cholera or small-pox is prevailing in the Eastern States, and appears to be travelling westward, there exists the same necessity for quarantine regulations on the line of the railroad among the mountains as at San Francisco. By careful examination, time may be gained, even though the epidemic is not stayed; the early cases may be seen and isolated, and warning given in time to put in operation sanitary measures throughout the State.

I shall not detain the society by giving an account of the methods adopted in quarantine for the prevention of contagion, and shall only mention a few matters of detail that various writers on the subject have recommended. Instead of examining only vessels engaged in foreign trade, it seems better that all ships should pass an examination and should produce bills of health; but as the bill of health only shows the condition of things at the time of sailing, and as contagious diseases may appear during the voyage, reliance should not be placed on it, but a thorough inquiry should be made by the health officer in regard to the condition of the ship. All cases of sickness should be carefully examined, and also the condition of the cargo. The lazaretto should be in some secluded place and so conducted that the charge could not be made against it, as has often been in relation to the Staten Island hospital—that it is a centre from which disease often spreads. Connected with quarantine should be health officers, whose duty it should be to enforce naval hygiene; to see that vessels are kept well ventilated and clean. All regulations should be such as would interfere with commerce and travel only so far as necessary to preserve the public health.

In conclusion, I would call the attention of the society to the following points:

First—That quarantine, as an adjunct to correct sanitary

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measures, should be enforced over lines of railway entering the State whenever an epidemic appears to be travelling westward, and, that it will succeed, because of the peculiar topography, if properly managed, in preventing pestilence.

Second—That the whole subject of quarantine and hygiene should be under the direction of the State Board of Health, in order to ensure efficiency.

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MEDICAL TOPOGRAPHY OF PETALUMA.

By G. W. GRAVES, M. D., of Petaluma.

Petaluma has about three thousand five hundred inhabitants, and is situated on the creek of the same name, about ten miles north of San Pablo bay, and about forty-five miles north-northwest from San Francisco. Petaluma creek, which runs through the city, is navigable for schooners of one hundred tons burden and for the smaller class of steamboats. The regular Minturn line of steamboats stops at the Haystacks landing, two miles below the city, where they connect with the Minturn railroad for Petaluma. The Sonoma branch of the California Pacific railroad passes through the city to Donahue landing, on deep water, eight miles below. Petaluma valley extends about four miles to the east, where the foot hills of the Sonoma mountains begin. These mountains, which divide Petaluma and Sonoma valleys, are nothing more than high hills, and are not deserving of being called mountains. The Sonoma hills produce fine wild oats, and in many places splendid crops of grain are grown on them. They are fertile and never fail to produce well. The beautiful valley between Petaluma and the Sonoma hills is covered with rich, natural grasses wherever it is not cultivated, though most of the land is covered with grain.

Nine-tenths of the city of Petaluma is built west of the creek, on the elevated land, which gently rises from the water

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front to the south, west and north. The hills in the city are gently sloping, and elevated from thirty to sixty feet above the level of the high water mark. The streets pass over these hills with easy grades, while a large portion of the city is built on level land, about ten feet above high water mark. There are many pleasant residences in the city, and many unoccupied locations, where delightful homes might be made, on the hills. The city is clean, the grade of the streets being just right for the winter rains to wash them during the season that we have moisture enough to cause vegetation to decay.

To the west of the city, there is a broken country extending to the ocean, a distance of about eighteen miles. This entire country is occupied with fine ranches, the majority for dairy purposes, while many of the smaller valleys and plains are cultivated in grain, potatoes, etc. Even the highest hills between Petaluma and the coast produce wild oats of good quality.

This is probably the best dairy country in the State. The eighteen miles of hilly, rolling country between the city and the coast, serve to break off the harsh winds to a great extent, yet Petaluma is rather a windy place during the spring months. The climate of Petaluma is never very warm, nor very cold, being like that of San Francisco. The winds are not strong, and seem to be just sufficient to keep off all the malaria that rises east of us, and to make Petaluma one of the healthiest towns in the State. There are no low lands west of the city, and as the winds prevail from the west, we generally have the healthy ocean breezes, tempered by passing over the oat-covered hills.

Neither intermittent nor remittent fevers are ever seen in the vicinity of Petaluma, unless the patient has been recently exposed to malarious influences elsewhere. Typhoid fever is very rare, and pneumonia is seldom seen here. We have no endemic diseases, and no epidemic has been troublesome here for a number of years, except small-pox, which prevailed in the winter of 1868–'69. Phthisis pulmonalis and chronic bron-

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chitis are probably as common here as in San Francisco, and patients with either of these diseases, do not find a suitable climate here for their cure. With the exception of phthisis and bronchitis, we repeat what we have said before in our monthly reports, that Petaluma is one of the healthiest localities on this continent, and furnishes as little practice to the physician, as any other place in the country, of the same number of inhabitants.

The following table shows satisfactorily the character of the prevailing diseases and the months in which they have proved fatal; also, the proportion of the sexes, and the condition in life, the ages, nativities, and the race of the decedents. It has been compiled by the Secretary of the State Board of Health from the monthly reports furnished by Dr. Graves, and is here inserted, not only because of its intrinsic value in revealing the remarkable salubrity of the locality and its entire freedom from fatal malarious diseases, but also as suggestive of the desirable form in which such information can be readily made available for statistics, by contributions from other points in the State.

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Table of the mortality from July, 1870, to June, 1871, inclusive, in Petaluma, Sonoma county; latitude, 38° 20′ north; longitude, 122° 30′ west; altitude, 45 feet above the level of the sea; population, 3,514; ratio of deaths per 1000 of population, 12.8.

CAUSES OF DEATH.	Total	SEX. Male	SEX. Female	CONDITION. Single	CONDITION. Married	RACE. White	RACE. Copper	RACE. Black	MONTHS. July	August	September	October	November	December	January	February	March	April	May	June	AGES. Under 1 year	1 & under 5 years	5 & under 10 years	10 and under 20 years	20 and under 30 years	30 and under 40 years	40 and under 50 years	50 and under 60 years	60 and under 70 years	70 and under 100 years	NATIVITY Pacific U. S.	Atlantic U. S.	Foreign countries
Accident (drowned)	2	2	....	2	.....	2	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	1	.....	.....	1	.....	.....	.....	.....	1	1	...
Accident (fall)	1	1	....	1	.....	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	.....	.....	.....	.....	.....	.....	.....	1	...	...
Ascites	1	1	....	.....	1	1	...	...	...	...	...	...	...	...	...	...	..	1	...	...	...	...	...	.....	.....	1	.....	.....	.....	.....	...	...	1
Brain, Inflam. of	3	1	2	2	1	3	...	...	...	...	...	...	...	...	1	...	1	...	...	1	...	1	...	.....	.....	1	.....	.....	1	.....	1	...	2
Cholera infantum	1	1	....	1	.....	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	.....	.....	.....	.....	.....	.....	.....	1	...	...
Convulsions	1	1	....	1	.....	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	.....	.....	.....	.....	.....	.....	.....	1	...	...
Consumption	6	3	3	4	2	5	...	1	...	...	...	...	...	1	...	1	...	1	1	2	...	...	...	.....	3	2	1	.....	.....	.....	...	4	2
Croup	1	....	1	1	.....	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	.....	.....	.....	.....	.....	.....	.....	1	...	...
Dentition	1	....	1	1	.....	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	..	.....	.....	.....	.....	.....	.....	.....	1	...	...
Diarrhœa	2	1	1	2	.....	1	...	1	...	...	1	1	...	...	...	...	...	...	...	...	2	...	...	.....	.....	.....	.....	.....	.....	.....	2	...	...
Debility	6	6	....	6	.....	6	...	...	...	...	2	1	...	1	2	...	...	...	...	...	6	...	...	.....	.....	.....	.....	.....	.....	.....	6	...	...
Enteritis	3	1	2	2	1	3	...	...	1	1	1	...	...	...	...	...	...	...	...	...	2	1	...	.....	.....	.....	.....	.....	.....	.....	3	...	...
Epilipsy	1	....	1	1	.....	1	...	...	...	...	...	...	...	...	...	..	...	...	1	...	...	...	...	.....	1	.....	.....	.....	.....	.....	...	1	...
Hydrocephalus	1	1	....	1	.....	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	.....	.....	.....	.....	.....	.....	.....	1	...	...
Heart, disease of	2	2	....	.....	2	2	...	...	...	1	...	...	...	...	1	...	...	..	...	...	...	...	...	.....	.....	1	1	.....	.....	.....	...	...	2
Inebriety	1	....	1	1	.....	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	.....	.....	.....	1	.....	.....	.....	...	1	...
Lungs, congestion	1	1	....	1	.....	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	.....	1	.....	.....	.....	.....	.....	...	1	...
Marasmus	1	....	1	.....	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	.....	.....	.....	1	.....	.....	.....	...	...	1
Old age	2	2	....	.....	2	1	...	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	.....	.....	.....	.....	.....	1	1	...	2	...
Pneumonia	2	1	1	1	1	2	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	.....	.....	1	.....	1	.....	.....	...	1	1
Stricture of urethra	1	1	....	1	.....	1	...	...	..	...	...	1	...	...	...	...	...	...	...	...	...	...	...	.....	.....	1	.....	.....	.....	.....	..	...	1
Suicide (by opium)	1	1	....	.....	1	1	...	...	1	...	...	...	..	...	...	...	...	...	...	...	...	...	...	.....	.....	.....	.....	1	.....	.....	...	...	1
Scarlatina	1	1	....	1	.....	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	.....	.....	.....	.....	.....	.....	1	...	...
Unascertained	3	2	1	3	.....	3	...	...	1	...	1	...	...	..	...	...	1	...	...	...	2	..	1	.....	.....	.....	.....	.....	.....	.....	2	1	...
Totals	45	30	15	33	12	42	...	3	4	5	5	3	1	4	8	2	3	3	3	4	15	3	4	1	5	8	4	2	2	1	22	12	11

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REMARKS

RELATING TO A SPLINT FOR THE TREATMENT OF FRACTURE OF THE INFERIOR MAXILLARY BONE.

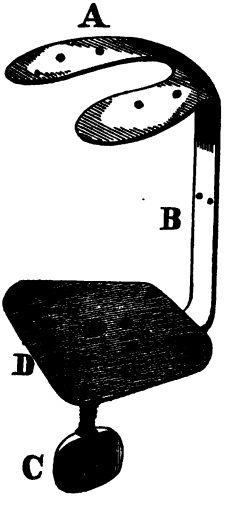
By R. W. MURPHY, M. D., of Sacramento.

I wish to call the attention of the profession to a sub-maxillary splint, which I have invented, and which I have *also tested* in two cases, and find it to have some practical advantages over the old system of dressing such fractures.

First—It is not so difficult to apply, and when applied it remains in position.

Second—It allows of the free use of the jaw and the taking of nourishment, even meats and solid food, and also the use of tobacco, both chewing and smoking.

Third—In comminuted fractures, perfect articulation of the teeth is easily secured, which is a point much to be desired, both by the physician and the patient.



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DESCRIPTION.

This splint consists in a plate A that rests upon the teeth of the lower jaw, similar to the impression plate used by dentists, with a narrow chin piece B passing from the plate down in front of the chin, turning at right angles under the jaw, through which pass a thumb-screw C, which connect with the lower sub-maxillary plate D. By means of the screw, the plate is pressed up against the under side of the jaw at the same time, and by the same force the plate in the mouth is pressed down upon the teeth, holding the fractured jaw between the two plates.

APPLICATION.

In simple fracture, all that is required is a little pad of cotton or some soft material on the under splint, the upper one that goes into the mouth is lined with soft rubber so as to adjust itself readily to the teeth. The fractured jaw is properly set, the splint applied and a turn or two with the thumb-screw, and the work is done.

In comminuted fracture of a very bad nature, where the parts are difficult to keep in place, so as to get perfect articulation of the teeth, the proper course would be to set the jaw carefully, so that each tooth articulate perfectly with its fellow. When in position, mould a piece of gutta percha properly prepared, to the under side of the jaw, bringing it a little up around the sides of the jaw and chin, and retaining it in place until it cools. Then allow the mouth to open and apply the splint as in simple fracture, retaining the gutta percha mould upon the jaw; the teeth are received into the soft rubber that lines the under surface of the mouth plate, and retained in place.

MATERIAL.

The splint presented to the Society is made of steel, and nickel plated, to prevent it from corroding in the mouth. The under plate is hard rubber, the whole splint may be made of hard rubber, which I think would be cheaper and answer every purpose.

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"WHY DO WE WEAR SPECTACLES?"

By ED. M. CURTIS, M. D., of Sacramento.

[Member of the American Ophthalmological Society.]

When desired, a short time since, by your Committee of Arrangements, to read a paper on some ophthalmological subject before this society, I at first hesitated; I had but recently arrived among you, the weather was warm and I decidedly indolent; but on reflecting upon the great abuse and misuse to which those tender and delicate organs (our eyes) are subjected, and upon how little is known by the majority of people in regard to their proper use and wonderful functions, I concluded that a few words, even on so dry a subject as why we wear spectacles, might prove of interest.

It is only twenty years since that eminent scientist and versatile genius, Professor Helmholtz, invented the ophthalmoscope. Previous to that time, no one had a correct idea of why spectacles were necessary, or of the exact manner in which they aided our eyesight; but by the scientific research and practical experiments of Donders, Helmholtz, Scheffler and their collaborators, with the aid of the ophthalmoscope and those exquisitely accurate mathematical instruments, the phacoidoscope and ophthalmometer, the discovery was made, in an incredibly short time, of the minutest physiological workings of the eye, and why and what glasses were necessary for each optical defect of that organ, with the greatest precision; greater perhaps than is attainable in any other department of mathematics; for the dioptics of the human eye dip more

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deeply into the higher mathematics than most of our legal friends are aware, and when they say that medicine is not a science, say ignorantly yet truly, for it is a combination of many sciences, not the least of which are mathematics and law.

In order to form a correct idea of the necessity for spectacles, one must understand something of the physiology of the dioptic system of the eye. (See Fig. 1.) The cornea, aqueous

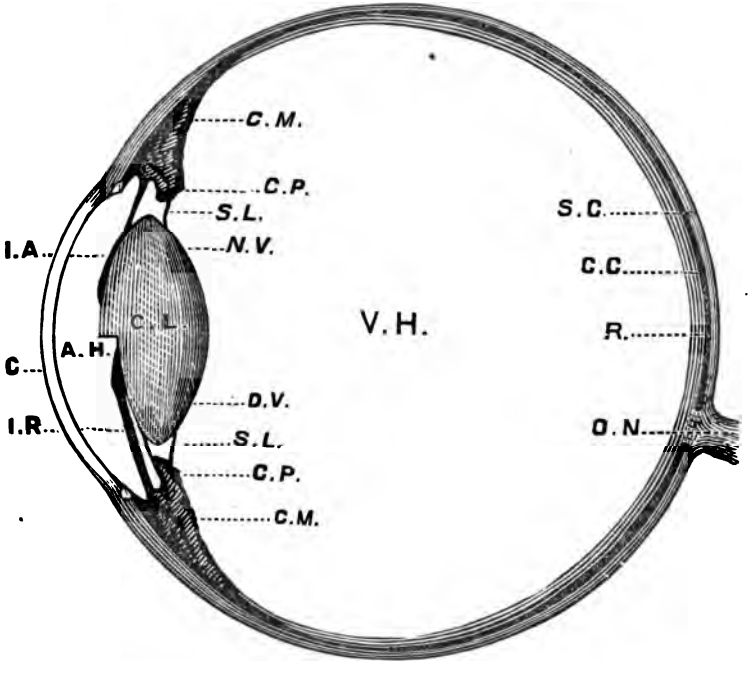

FIGURE 1. EXTENDED FROM JÆGER—ENLARGED LONGITUDINAL SECTION OF THE EYEBALL, THROUGH THE CORNEA AND OPTIC NERVE.

C., cornea; A. H., aqueous humor; C. L., crystalline lens; V. H., vitreous humor; S. C., sclerotic coat; C. C., choroid coat; R., retina; O. N., optic nerve; C. M., ciliary muscle; C. P., ciliary process; S. L., suspensory ligament of the crystalline lens; I. A., iris, when the eye is accommodated for near objects; it is seen to be nearer the cornea than when the eye is at rest or looking at distant objects as at I. R.; N. V., the upper half of the crystalline lens, down to the break in its anterior surface, shows it more convex and thicker—its condition when the eye is receiving divergent rays from near objects—than the lower half D. V., which is seen to be less convex, its condition when the eye is at rest or receiving parallel rays from objects eighteen or more feet distant.

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humor, crystalline lens and vitreous humor, though each having a different index of refraction, may be considered as forming one powerful double convex lens, capable of converging parallel rays of light to a focus at its posterior surface on the retina, which is so prepared as to receive a correct image of objects, but in an inverted position, on account of the rays of light crossing each other in coming from the object to the retina, in the same manner that the image is formed in the ordinary camera obscura. From the retina, a telegram of the impression is sent to the brain by that special line, the optic nerve, and an answer of "all right, go ahead," is immediately returned. Instantly the rays of light are reflected back from the impression on the retina, through this compound lens, the eye, being a second time inverted, and we see before us an upright image of the object at which we have been looking. We do not, as is usually supposed, actually see the object, but its image, which may be made greater or less than the real size of the object, by using a proper lens before the eye, in a similar manner to that which is done in some forms of the camera lucida. Indeed, the eye is not only a camera obscura, as often described, but it also has a lucid attachment; the images of surrounding objects are not only perfectly formed in the dark chamber, but they are also projected magnificently and clearly before us.

When the eye is at rest, only those rays of light which are nearly parallel are brought to a focus on the retina, as shown in Figure 2. But in nature there are no actual parallel rays

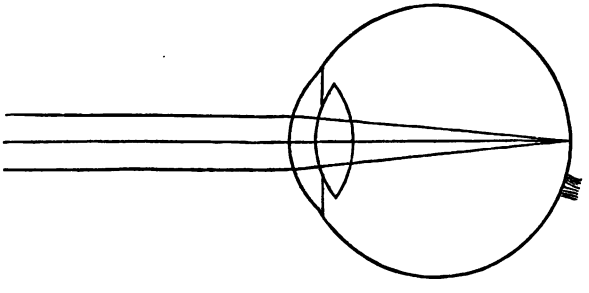

FIGURE 2. NORMAL SHAPED EYE AT REST, RECEIVING PARALLEL RAYS.

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of light, as all rays which emanate from, or are reflected from, an object, diverge; yet all those rays of light which are so near each other as to pass through so small an aperture as the pupil of the eye, proceeding from objects eighteen or more feet distant from us, are near enough parallel for all practical purposes, and are considered, in optics, the same as emanating from objects at infinite distance. But when the object is nearer to us than eighteen feet, the rays of light become so divergent as not to be focused upon the retina without some change taking place in the eye; that is, if the eye remains at rest, in the same condition as when viewing objects more than eighteen feet from us, the rays of light from near objects would come to a focus behind the retina, as shown in Figure 3, and a blurred image would be produced on that membrane,

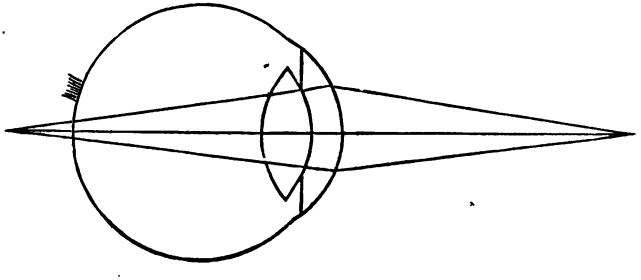

FIGURE 3. DIVERGENT RAYS OF LIGHT FROM A NEAR OBJECT ARE BROUGHT TO A FOCUS BEHIND THE RETINA IN THE NORMAL EYE, IF IT REMAINS AT REST.

the object appearing indistinct. But we see near objects distinctly. How this was done was for a long time a mystery, many theories being adduced to explain it; but it has now been definitely ascertained by Helmholtz, Müller and others, that the crystalline lens increases in convexity the nearer an object approaches the eye (Fig. 1), so that for every increase in divergence of the rays of light, there is a corresponding increase in the convexity of the lens sufficient to bring the rays to a focus on the retina, provided the eye is normal in

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structure and the lens has not become hardened by age. This change of convexity, or act of accommodation as it is called, is brought about by the contraction of the ciliary muscle (C. M., Fig. 1), a small, circular muscle, situated between the iris and choroid in the median tunic of the eye. These changes are often compared to the screw which regulates the focus of a field glass, which must be changed for each different distance at which we wish to observe objects. Although this action of the ciliary muscle was plainly demonstrated fourteen years ago, yet as Dr. Jeffries aptly remarks, "You will rarely, to-day, find it in any of the works on optics studied at our universities and schools," which, on the contrary, abound in such nonsensical ideas as that old people must wear spectacles on account of flattening of the cornea; that the crystalline lens is a tough, gristly substance, and many similar assertions, hardly in accordance with that exactness one would expect to find in the text books on the higher mathematics.

During youth, the lens is gelatinous and elastic; its convexity is changed by the slightest tension of the ciliary muscle; but year by year it increases in density, and at length becomes so hard and inelastic that the necessary curvature to focus the diverging rays from near objects upon the retina can no longer be produced. This condition is called presbyopia, or long-sightedness, and is obviated by the use of convex glasses, which take the place of the usual increase of curvature in the crystalline lens in viewing near objects. It commences in persons with normal eyes when about forty, as is shown if they attempt to read any fine print or to do embroidery by a bad light. Spectacles are not usually necessary, however, before forty-eight, and few will confess that their eyes are failing them for several years later, when they are compelled by inconvenience and discomfort to procure glasses, having, as is sometimes the case, delayed the matter so long that the foundation is laid for future disease of the eyes, by their refusing to use those aids to vision persistently

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demanded by nature and approved by both science and experience.

The normal eye has no need of glasses till the commencement of presbyopia; but if the eye be abnormal in form an error of refraction will be present and glasses may become necessary at a much earlier age. In hypermetropia—or oversightedness, a condition of the eye first accurately described by Prof. Donders of Utrecht, twelve years ago—the antro-posterior diameter of the eyeball is shorter than natural. We saw in the normally constructed eye that the retina was at such a distance from the lens that parallel rays of light were brought to a focus upon its surface without any effort of accommodation; now if by any means the retina be brought nearer to the lens, the focus for parallel rays would fall behind its surface, on which circles of dispersion would be formed so that the outline of objects would be blurred and indistinct; and this is what actually takes place in hypermetropia as shown in Figure 4. But if a convex lens be placed before such

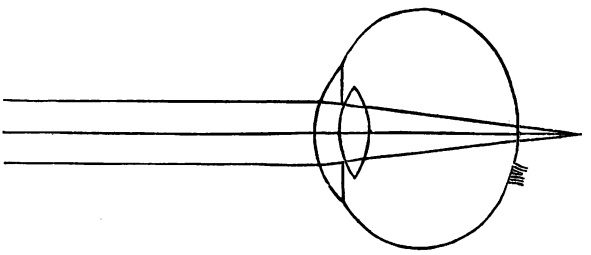

FIGURE 4. SHOWING THE FORM OF THE HYPERMETROPIC EYE, ANTRO-POSTERIOR DIAMETER TOO SHORT.

an eye, parallel rays are again brought to a focus on the retina (Figure 5); and in youth, if the error of refraction be not too great, the ciliary muscle by an extra effort may cause a sufficient convexity of the crystalline lens to overcome the difficulty; but as the lens becomes hardened by age, the power of the muscle is found to be insufficient to continue the increased convexity, necessary to see near objects clearly, for

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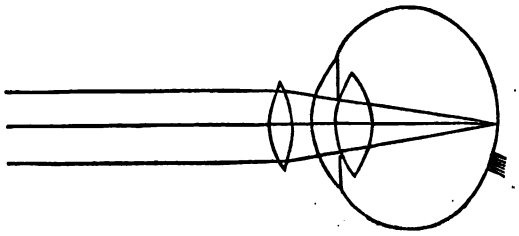

FIGURE 5. REFRACTION OF A HYPERMETROPIC EYE, CORRECTED BY A CONVEX LENS.

any great length of time, and symptoms of asthenopia—or weak sight—intervene. Patients complain that after reading or doing any close work for a short time, objects become indistinct, the eyes are blurred and feel tired, and if the occupation is persisted in, pain in and about the eyes supervenes. These troublesome symptoms cannot be avoided without the use of appropriate glasses, and the greater the amount of hypermetropia—that is, the shorter the eyeball—the earlier in life will glasses be necessary.

That oft repeated story, but oftener observed in practice than seen in print, of the little child who could read with his grandparent's spectacles, is full of instruction. The little one is said to be near sighted, but his mother has taken him to the watchmaker's, and perhaps to the variety store, and tried all the near sighted glasses, and each one made his sight worse; but one day he gets his grandmama's specs and surprises every one by the facility with which he can see. Yet these glasses, the very ones perhaps which he needs, are snatched away from him for fear they will make his eyes old, and he is left to grope his way in a perpetual haze, worse than a London fog or a continual twilight.

Nor is the uncertainty in regard to this trouble of the eyes confined to children. A very intelligent lady of twenty-five years, came to me complaining that she had always been near-sighted, but had never been able to find glasses that would

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benefit her. I saw at once, from the peculiar shape of her eye, that her trouble was quite the opposite of near-sightedness, in fact that she was hypermetropic, and on giving her proper glasses, she at once, and for the first time in her life, saw distinctly.

In myopia—or near-sightedness—the error of refraction is quite the opposite of that last considered, for while in hypermetropia the antro-posterior diameter is too short, in myopia it is too long (see Figure 6), the retina is too far from the lens, and

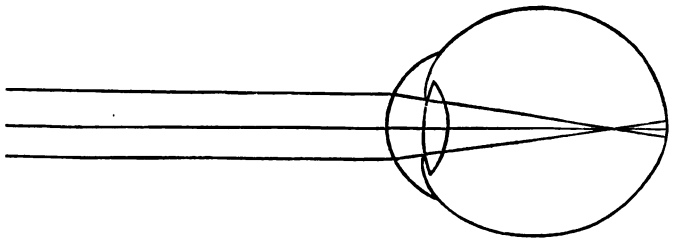

FIGURE 6. SHOWING FORM OF THE MYOPIC EYE, ANTRO-POSTERIOR DIAMETER TOO LONG.

parallel rays of light are brought to a focus and cross each other before they reach that membrane, on which circles of dispersion are formed, and indistinct vision is the result. But if a proper concave lens be placed before such an eye, the rays are rendered diverging, so that after entering the eye they are brought to a focus upon the retina. (Figure 7.) This is a more

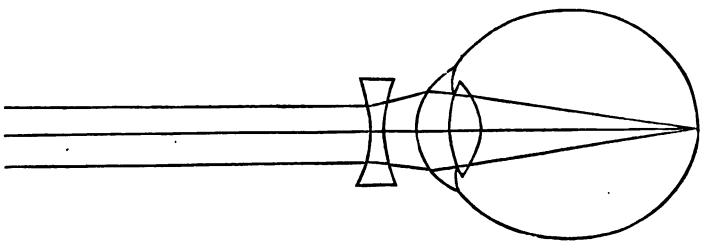

FIGURE 7. SHOWING REFRACTION OF THE MYOPIC EYE CORRECTED BY CONCAVE GLASS.

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dangerous trouble than the former, being progressive in its character if aggravated by misuse of the eyes or by improper spectacles; it sometimes leads to the total destruction of all useful vision. We sometimes hear young persons congratulating themselves on being slightly myopic, for, they say, "we shall not be obliged to wear glasses until we are very old," but, like the sword of Damoclese, I would consider the situation more dangerous than agreeable. Our great master in physiological dioptics, Prof. Donders, was the first to point out that "the near-sighted eye is not a sound eye," a changed condition of the retina and other coats of the eye about the optic nerve, called posterior staphyloma, is always present, and unless checked by appropriate care and treatment, may result most disastrously. This is the most frequent anomaly of refraction, especially among the educated classes. Recent examinations of over fifteen thousand students and school children, made in different parts of Europe by Dr. Cohn and others, revealed the fact that from fourteen to sixty per cent. were near-sighted—the percentage increasing in direct ratio with the grade of the school. The most prominent causes of this were found to be defective light and badly constructed school furniture, though the misuse of eyes already commencing to show myopia, and improper spectacles, had much increased the trouble. All school rooms should be thoroughly and properly lighted; the light should come to the seat from the sides and not from the front or back. The seats and desks should be so arranged that the scholars' books are at a proper distance from their eyes when they are sitting upright; as the stooping posture, long continued, must induce congestion of the ocular vessels, and thus may cause myopia, as well as increase it when it has already commenced. On looking into such eyes with the ophthalmoscope, the changed condition of the retina and choroid is readily seen, and the ophthalmic surgeon is enabled to pronounce whether the disease is progressive or stationary, and what amount of work the eye may safely perform.

Another error of refraction, which has been known for many

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years, but to which little attention has been given, is astigmatism; it is usually dependent on irregularity in the curvature of the cornea, in consequence of which, rays of light which enter the eye in a perpendicular meridian are not brought to a focus at the same point as those which enter the eye horizontally; portions of an object—those from which the rays are focused upon the retina—are in that way seen plainly, while other parts are indistinct, as for instance in Figure 8, if a person sees at a distance of six feet, all the different sets of parallel lines with equal plainness, and they are all equally black, the

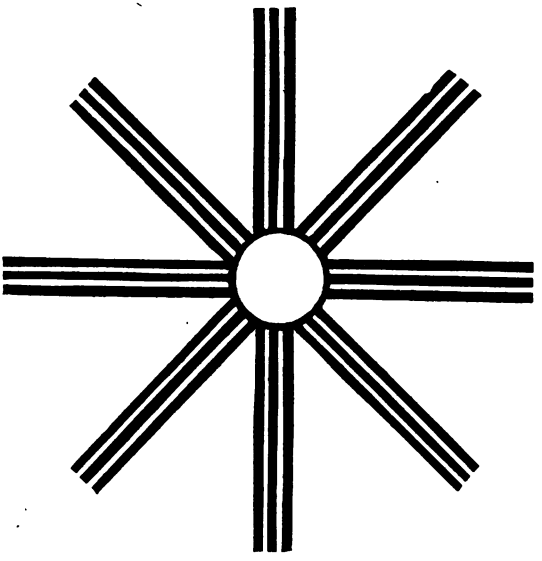

FIGURE 8. A TEST FOR ASTIGMATISM.

cornea is symmetrical; but if a part of them appear darker than the others and are more clearly defined, the person has astigmatism, which may be neutralized by a peculiarly shaped glass, ground to correct the differences in curvature of the different meridians of the cornea. These glasses are called cylindrical, and are often combined with the ordinary convex and concave spherical glasses.

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A young lady, aged eighteen, applied to me some three years since. Her sight had been bad from infancy, and though constantly changing spectacles, she had never found any that gave her good vision, and her eyes were growing weaker year by year. After a protracted examination, she was fitted with a combination of spherical and cylindrical concave glasses, and on stepping to the window and looking upon the crowded street, she exclaimed in grateful tones, "how wonderful; I have never seen objects distinctly before;" which was true. The poor girl had lived in semi-unconsciousness of all that was passing about her, and never till that day had she seen the outline of any object clearly defined.

So far we have answered the question of "Why do we wear Spectacles?" by showing that every person with natural eyes needs convex glasses as aids to perfectly accurate vision for near objects, before they reach the age of fifty; that hypermetropes, or persons whose eyeballs are too short, need convex glasses much earlier; that myopes, or those whose eyeballs are too long, need concave glasses early in life; while astigmatics, or those whose corneas are not symmetrical in curvature, need cylindrical glasses. There are besides these four great classes of people who need spectacles, occasionally others who should use them to counteract some especial trouble, as for intance, in aphakia, where the crystalline lens has been lost from injury, or after the operation for cataract, very strong convex glasses are needed. In cases of paralysis or weakness of the muscles of accommodation, the ciliary muscles, convex glasses are necessary for near objects. In cases of insufficiency or weakness of the recti muscles, prismatic glasses are sometimes necessary, and they are also used in some cases of strabismus or cross-eyes. Stenopaic glasses, or those which only admit the light through a narrow aperture, are of use in cases of irideremia or absence of the iris, in some high grades of myopia, and in some cases of opacity of the cornea. The periscopic glasses, comprising the positive and negative menisci,

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are only modifications of the ordinary concave and convex lenses, in the place of which they are frequently used. The pantoscopic or Franklin glass, named after their inventor, are ground with the upper and lower half of the glass of a different curvature, to suit the eye for different distances, but are not often used. The same object is sometimes accomplished by having the top of the spectacle frames flat, so that the eye can look over them at distant objects. Glasses for modifying the intensity of the light are sometimes necessary, but much less often than they are used. In photophobia, or intolerance of light, blue glasses are preferable to green, for the reason that the latter exclude only the red rays, while the former absorb the orange, which are the most irritating to the retina of all the colors of the solar spectrum; but where the retina does not seem to be irritable, and we only wish to modify the amount of light, the neutral tinted glass is preferable. Goggles are rarely of benefit, as their wire frames are apt to overheat the eye. Those who are in the habit of using them in crossing the alkali plains and among the snows of the Sierras, would find the eye-protectors, made of thin glass, shaped like watch crystals and of a mild, neutral tint, more comfortable and beneficial, as they set closely to the eye on all sides but the temporal, where a sufficient amount of air is admitted to keep the eye cool and evaporate any undue moisture. Thick plates of plain glass or pieces of clear mica are also useful in protecting the eyes in some employments like stone cutting, needle grinding, etc.

It of course would be very weak and foolish to advance so absurd an idea as, that a person should wear glasses whose eyes do not need them; yet it is just as puerile, besides being productive of harm, to say that none should use spectacles so long as they can avoid them. The man who has suffered amputation of the thigh, walks very well by the aid of a properly adjusted artificial limb; persons who have lost their teeth get along very nicely with a well constructed artificial set; and people whose crystalline lenses are incapable of per-

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forming their natural functions, or have lost those valuable appendages, are just as much in need of artificial lenses—or spectacles—as an aid to sight, as are the two previous classes to their accessory adjuncts. Yet there is a wide spread popular prejudice against the use of spectacles, for which it is very hard to assign a reason. Perhaps it arises from the idea that if one commences the use of spectacles they will always be obliged to wear them, which is not universally true. The use of glasses does not in itself increase the need for them, any more than the use of a cane increases lameness. If the difficulty for which the glasses are given should pass away, as it sometimes does, they might as readily be laid aside as are the crutches of the rheumatic patient on recovery from illness, and it would be just as reasonable to refuse the latter the aid of his crutches at a time when he must of necessity walk as it is to hesitate in giving spectacles to those people whose ciliary muscles are constantly, but vainly, striving to overcome some error in refraction.

Every person, before the age of fifty, would be more or less benefited by the aid of glasses; at least one in every three would perceive that benefit by the age of forty; one in every five by the time they are thirty, and one in ten as early as the age of twenty. Although this estimate may seem enormous, it is actually less than the percentage of cases of errors in refraction that have been found whenever the eyes of large numbers of individuals have been examined. But no one expects that all who need glasses will be persuaded to use them; the prejudice against them is too deeply seated in the popular mind; and ophthalmic surgeons will be well content if, by showing their necessity, they can persuade those whose sight is being slowly destroyed by the non-use and abuse of spectacles to a proper use of those wonderful accessories to vision.

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OPHTHALMIC AND AURAL SURGERY.

By W. F. SMITH, M. D., of San Francisco.

I will not presume to claim your attention for anything more than a cursory consideration of so large a subject. The eye, though comparatively so small an organ, is the instrument and representative of the most important function pertaining to our physical nature. Its history could not be written upon a single page; nor could even its anatomy be presented to you within the limits of a single paper. No greater evidence of the importance and interest pertaining to the subject of ophthalmology could be instanced than the fact, that among the gifted and talented men of the nineteenth century who have devoted their labors to the advancement of medical science, a large proportion of the brightest lights have directed almost their entire attention to this subject, and it has been seized and prosecuted with that tenacity possible only to such men.

This branch of science has attained such magnitude that the the graduate of twenty-five years ago feels called upon to acknowledge his amazement, and to profess as much ignorance of the manner of its achievements as he does of the construction of a suspension bridge, or of the principles by which the civil engineer directs a tunnel through the base of a mountain. Besides the microscope, which is brought into requisition in the study of its anatomy and pathology, we find the higher mathematics pressed into the service, and the most intricate mathematical instruments have been invented to facilitate the

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study of the refractive condition of this wonderful optical apparatus, until we are enabled, by the aid of these exact sciences to boast that, at least as many tangible facts may be presented pertaining to ophthalmology as can elsewhere be found in the whole course of medical study.

The mystery, as to how we see, has been so far resolved, that we can observe a pencil of rays as it pursues its course through the refracting media and traces an image of the illumined object, from which it emanated, upon the retina, and in an imperfect or distorted image we are able to discover the faulty refraction which dulled the pencil's point or caused an aberation in its course.

Clinical studies of the pathology of this organ have taught us the importance of conservative surgery as connected with it; also that the knife, properly and carefully used, is a wonderful and indispensable assistant in removing obstructions to the passage of light to the retina, and in correcting certain pathological conditions. Of the later improvements, the principal ones in this direction have been invented and practiced by the lamented Von Græfe, who has, with justice, been styled the father of modern ophthalmology. Reference to a few facts relative to the operative interference for the removal of cataract, will illustrate the advances which he, with a few of his contemporaries, has made in its practical study.

Couching and discission were the first operations resorted to for the treatment of cataract. The operation of couching is known and described only in the history of one specialty, and at present is never performed by the oculist. After the best possible result, the operation still leaves a foreign body in the vitreous, which experience teaches us is liable at any moment to institute inflammatory conditions, productive of the most disastrous results to the organ. Discission is still successfully performed in cases of congenital cataract, although in any other class the indications for its employment are always doubtful. Extraction or complete removal of the opaque lens, has been the favorite method during the past few years.

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When first attempted, it was practiced through the cornea, the lens being forced through the pupil in its passage from the globe. This operation was somewhat improved by combining iridectomy with it, thereby facilitating the exit of the opaque body. The operation, however, with the best care, still exhibited a list of failures equal to twenty-five per cent. of all the cases attempted.

Jacobson increased the percentage of successes by making his incision in the sclero-corneal junction, and Von Græfe, by the invention of his combined linear extraction, reduced the percentage of failures to four per cent.

The rationale of Græfe's operation is as follows: Consider a bladder or sack, distended to the shape of a sphere by gelatinous contents, sufficiently compressed to give it sensible tension. Now the internal distending force (in the case of the eye the intra-ocular tension) of the sphere, is obviously exerted from the center toward the circumference, in the line or direction of the radii. An incision made, therefore, in the bladder, shorter than the length of the diameter of the sphere, and following one of its great circles, would show no tendency to gape, and would not necessarily cause an escape of the contents. On the contrary, however, an incission following one of the lesser circles, one parallel to the equator, would gape from necessity, since the internal distending force exerted in the direction of the radii, would push apart the lips of the wound and allow a free exit of the contents. All the primary incisions for the operation for cataract, excepting the one recommeded by Von Græfe, are made to follow one of the smaller circles of the ocular globe, hence a very frequent and dangerous complication of the operation, even in the most favorable cases, is the escape of vitreous. Græfe's linear incision follows one of the meridians of the ocular globe, and when properly made, shows no tendency to form a gaping wound. It is made upwards in the sclerotic, its extremities distant about one-half of a line or two *mm* from the cornea, and the center should be at or very near to the sclero-

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corneal junction. The wound in the sclerotic being made, there still remain two obstructions to the exit of the lens, viz: the iris and capsule of the lens. From the fact that if the lens is forced to pass through the pupil, the sphineter is always more or less lacerated, Græfe combines an iridectomy with his operative procedure, as the second step in the operation. After a section of the iris has been removed, the capsule is lacerated by a V shaped incision made with the cystotome, which now leaves no obstruction to the exit of the lens while at the same time no tendency to the escape of vitreous is manifested. The aqueous humor having been evacuated, the lens falls forward and its periphery comes in contact with the line of the wound, and it is now a simple and easy matter to depress the lower lip of the wound with the hard rubber scoup, at the same time exerting firm and constant pressure on the opposite edge of the cornea, and thus cause the escape of the entire opaque mass.

This operation is a triumph of mechanical genius, and when each step is carefully made by a firm and confident hand, it is almost certain to succeed; so much so, that the statistics taken at large, show as a general result for all cases, with their complications, only four per cent. of failures, as before stated.

Conservative surgery in its fullest and broadest sense is attracting, or rather demanding the attention of all medical men, and has, for every one of us, a great and peculiar interest. In watching the progress of a given case the question is, how far shall we leave it to nature's own powers? or, at what point shall the surgeon interfere with his instruments? Very often one is forced to regret a too hasty action; and sometimes also, one reflects upon one's self for too much caution, which is occasionally a convenient term for actual cowardice.

There is a certain class of diseases and injuries of the eye which often present this question. I refer to that class usually affecting the cilliary body and which are liable to produce sympathetic ophthalmia. Diseases of one organ as products of sympathy with another are rare, but a glance at the ana-

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tomical construction of the two ocular globes will show the imminence of disease by sympathy, under certain circumstances. The muscles of the globe and its appendages are under the control of nerve fibers from both the voluntary system and the great sympathetic. Thus, we have perfect control over the muscles of the eyelids and can open or close them at will, but when the forces retire, as in sleep, the lids close to protect the globes, in obedience to an impulse furnished by a ganglion of the great sympathetic. The muscles of the iris mainly perform their functions by reflex action, but this statement with regard to the movement of accommodation as a function of the ciliary body, could be very seriously questioned. All these muscular actions pertaining to the two eyes are in perfect unison; the movements of the lids, of the globes, of the irises, and of the ciliary bodies occur simultaneously, especially those of the ciliary body and iris. It has been remarked that any disease of one ciliary body, whether produced by injury or otherwise, is liable to affect its fellow. Sympathetic ophthalmia is ushered in by ciliary neuralgia, followed by dimness of vision owing to plastic exudation, occlusion of the pupil, violent iritis, choroiditis, (possibly of the supurative type) and subsequent atrophy of the globe, with complete loss of visual power.

A disease having such a terrible chain of symptoms should certainly receive a share of our attention, and if any means, prophylactic or otherwise, can be discovered to combat its existence and progress, the greatest care should be exercised in their most thorough employment. It was first proposed by some German surgeons to divide the optic nerve on the affected side, thinking in this manner to completely sever the connection between the two eyes. This means failed to arrest the pathological process, and they practiced removing a *section* of the nerve to the same end, and with the same result. The intimate connection of the two globes by the medium of nerve fibers derived from the ciliary ganglia was next observed, as probably explaining the great tendency of one ciliary body to

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participate in the pathological processes of the other. It was now suggested to divide the long ciliary nerves anteriorly to the equator, and this was found to be more effectual, but was also found to be almost equivalent to an amputation of the globe, with its attendant long and tedious healing process.

The operation, therefore giving the most satisfaction to both surgeon and patient, is that of *enucleation*. After this operation, shortly to be described, there is no separation or bleeding, and the healing process is complete in from three to eight days. I have myself inserted an artificial eye on the eighth day, which has been worn without pain or inconvenience. We claim this operation to be one of the triumphs of conservative surgery. It should not be deferred until the symptoms of sympathetic disease have already appeared in the healthy eye, but should be performed as soon as it is determined that the ciliary body of an eye has sustained serious and permanent injury, especially such as produced by penetrating wounds of the globe. Sœlberg Wells very graphically states and answers the question as to operative interference in these cases on pages 202 and 203 of his Treatise on Disease of the Eye, edition of 1869.

The operation itself may be briefly described as follows: The wire speculum having been introduced, the conjunctiva is raised close to the inner margin of the cornea by a pair of mouse tooth forceps and a small opening made with the points of the scissors. After this step, I am in the habit of dropping the scissors and of using instead, Browman's curved, probe pointed knife for slitting the canaliculus, and with it shaving off, sickle fashion, the conjunctiva from the cornea at the conjunctival ring, by insinuating the probe point between the membrane and the globe. This leaves a much neater wound which heals more kindly and more quickly than when the conjunctiva has been haggled from its corneal connection by a pair of scissors. A pair of straight scissors should now be used and two incisions made in the conjunctiva so that it may be divided in a line from a point corresponding to the

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center of the cornea, from canthus to canthus. All the muscles excepting the external rectus, are then to be successively raised upon the strabismus hook and their attachments to the globe divided in the following order: First, the internal rectus; second, the superior rectus; third, the inferior rectus; fourth, the superior and the inferior oblique muscles. The forefinger of the left hand is then to be passed between the inner side of the globe and the inner canthus until it touches the optic nerve; the large curved, blunt-pointed scissors are passed along the finger and the nerve divided close to its entrance in the sclerotic. The globe may then be pushed or rolled out of the orbit, as its only remaining attachment is by the tendon of the external rectus, which is next divided, completing the operation. The compress bandage is then applied in the usual manner. Generally no hemorrhage occurs and the bandage may be removed after seventy-two hours, when the horizontal wound in the conjunctiva is found to be perfectly united. The whole of the mucus membrane being intact and the muscles being still *in situ* as regards the capsule of tenon, an excellent base on a plane with the cul-de-sac is formed for an artificial eye, which is almost invariably capable of very satisfactory movements.

The two following, rather remarkable cases, chosen from quite a number which have fallen under my notice during a practice of nearly two years in San Francisco, will serve as illustrations.

FIRST CASE.

Mr. U——, aged forty-eight, consulted me September 11th, 1870. He stated that the evening before, while witnessing a chemical experiment, an explosion of a glass vessel occurred, and a piece of glass struck the left eye. The patient was suffering great pain; found a wound in the center of the cornea; could also distinguish a square opening in the iris close to the outer side of the pupil. In attempting to find some evidence of a foreign body with the probe, a portion of the lens escaped, showing that it had been larcerated; used cold compresses,

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solution of atropine, and subsequently dry compression by means of a bandage. During the first week the patient was subject to paroxysms of severe pain. The usual anodynes were employed; patient suffers however from great insomnia and fits of melancholy. The operation of enucliation was suggested but not consented to; patient evinces, during the third and fourth week, loss of memory, great dejection of spirits, almost complete loss of appetite, and intense supra-orbital pain. Photophobia and phosphenes or appearances of flashes of light when the eyes are closed, are symptoms which now became manifested in the uninjured eye, indicating the commencement of sympathetic disease. The operation was now insisted upon and finally consented to. It was made, the patient being under chloroform, on the 24th of October about six weeks after the injury had been received.

On examining the extracted globe, a piece of glass was found fastened in the sclerotic about two lines external to the optic nerve entrance, near to the position of the *macula lutea*; it was six lines in length and one line square; it had passed through the iris and lens, and had become firmly imbedded in the sclerotic, its body remaining immerged in the *vitreous fluid.* The bandages were removed the third day. All the untoward symptoms as to the uninjured eye had disappeared. The patient enjoyed good rest, the appetite returned, and two weeks after the operation an artificial eye was adjusted, which has since been worn with comfort.

SECOND CASE.

Mrs. E. B. presented herself to the clinic of Toland Medical College, in August, 1871. Found that there was total loss of vision of left eye. It also appeared somewhat atrophied. On applying pressure through the lids, on the anterior portion of the globe, very little tension could be perceived, but the posterior two-thirds of the globe was hard almost like wood. Patient stated that this eye had been sore as long as she could remember. It was also very sensitive at times; in fact, gave

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evidence of sub-acute inflammation of the iris and ciliary body. There was lachrymation and photophobia of the right eye with great fatigue of the accommodation. She was able, however, to read number three of Snellen's test types with the aid of a convex lens number twelve. She stated that the symptoms she then complained of as to the right eye, always accompanied an exacerbation of the pain and sensitiveness of the left, and that she supposed it was through sympathy with it. Evidently the right eye was in great danger from sympathetic ophthalmia. Enucleation was performed in the usual manner before the class at the next meeting of the clinic. The operation was followed by a gradual disappearance of all the distressing symptoms as to the right eye, very much to the patient's relief, both mentally and physically. The patient wore an artificial eye with ease eight days after the operation.

The peculiarity of this case, however, existed in the pathological condition of the globe which had been removed. An examination was made immediately after the operation, and the following conditions noted: The cornea was contracted in all its diameters, and the sclerotic was wrinkled, giving the globe a shrunken appearance. On attempting to open the globe by a longitudinal incision, the knife grated as if in contact with bone. The pupil was closed by a false membrane, and the iris considerably atrophied. The lens was found contracted and had degenerated into a calcareous mass. The vitreous chamber was occupied by a light yellowish fluid. The retina, completely detached, was stretched in folds from its attachments at the ciliary body to the optic nerve entrance, and seemed degenerated into a sort of fibrous tissue. The *lamina fusca*, the venae vorticosae, and also the ciliary nerves, seemed almost in their normal condition. The *chorio-capillaris* and the layer of hexagonal pigment cells, however, were replaced by a layer of *true bone*, which at its thickest part, viz: near the optic nerve entrance, was one line in thickness, thinning off from this position anteriorly to a sharp edge, which encroached upon the ciliary body, the whole forming a

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stout little cup-shaped shell, having a hole in the bottom corresponding to the optic nerve entrance. This interesting specimen is preserved and may be seen in the museum of the Toland Medical College.

This case seems closely allied to one reported and commented on, in a very interesting paper entitled "Formation of Bone in the Eye," by Professor Knapp, in his Archives of Ophthalmology and Otology (Vol. II, No. 1, pp. 1–35).

In concluding this paper, I wish in a very few words to present a few suggestions in regard to the treatment of affections of the middle ear. The eustachian catheter is invariably required to affect local treatment of this region. I will not revert to the method of its easy and effectual introduction; but once in position, what is the best manner of inflating the middle ear or of carrying fluids and vapors into the cavity of the tympanum? Usually this is accomplished by means of a thick india rubber, pear-shaped bag. This is in some respects rather an awkward instrument, and when used against the open end of the catheter never so expertly, must cause some pain and uneasiness to the patient. It forces a puff or spurt of air, of very short duration, into the cavity, and even this cannot be invariably effected. I have conceived the idea of using a foot bellows, so constructed and connected, as to cause a constant stream of air to pass into the catheter. Reference to the following figure will illustrate:

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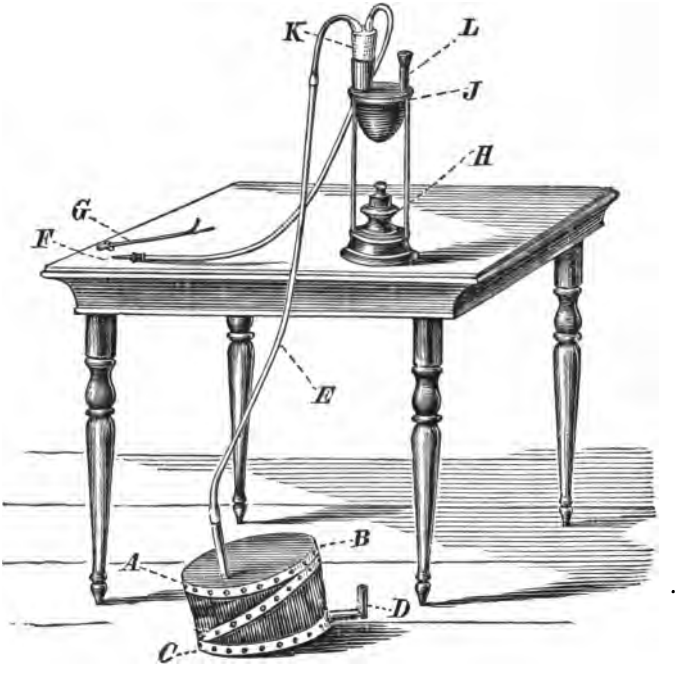

The bellows, represented as resting on the floor near the table, is made of three circular wooden plates, eight inches in diameter, connected by hinges at the points C and B. The first instrument I used, I constructed myself, and found considerable difficulty in adjusting the bands and covering the boards with leather so that it should be perfectly air-tight. The tube D admits the air into the lower chamber. This chamber is kept open by a wire spring placed between the bottom and middle boards. The openings in each of these plates is furnished with a valve on its upper side. It can easily be seen, that a rocking motion with the foot on the top of the bellows, would occasion a constant stream of air to pass through the rubber tube E. The cork K connects the tube with a brass vessel J supported over a spirit lamp H. The cork K is perforated by another opening which connects with a second rubber tube bearing a nozzle F, which fits the cathe-

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ter. After the introduction of the catheter, the use of the bellows, which is governed by the foot, obviates most of the disadvantages felt in using the pear-shaped bag. The stream of air is constant, and may be strong or weak at will, in some cases acting almost as effectually as a bougie in separating adhesion in the eustachian tube, and in establishing free communication between the throat and middle ear.

The right hand is perfectly free during the operation, and it becomes an easy matter to cause the injection of fluids, without depending upon any sleight of hand or superior expertness in managing the catheter. Other minutiæ in the treatment of a patient are also very much facilitated. I have found also by actual experience that the use of the constant streams of warm air in cases of acute or even chronic catarrh of the middle ear, often produces the most surprising results, and in all cases where daily injections or inflations of the middle ear are indicated its superior usefulness is perfectly unmistakable.

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HYGIENE,

AS REGARDS THE SEWERAGE OF SAN FRANCISCO.

By ARTHUR B. STOUT, M. D., of San Francisco.

Having given the subject of hygiene, as regards the city of San Francisco, much attention in the *California Medical Gazette* of October, 1868, and in the same journal of March, 1869, which are herewith annexed, the present occasion appears opportune to follow up the question with some further observations. This subject is worthy the attention of the State Medical Society because it is of vital interest, not only to the city of San Francisco, but to every city and town in California. If the engineer who runs the first lines of a new town would carry in his plans the appropriate grades for sewerage, and study the question of health and malaria, he would not only merit well in the estimation of his employers, but economize large sums of money to the future residents of his incipient city. San Francisco, in its incessant alteration of grades, is paying dearly for original neglect. The prospect that early legislative action will establish a competent board of public works for the city and county of San Francisco incites in this matter a revived interest. If a doubt could be entertained that the honorable Legislature would withhold its assent to the creation of such a board, it is to be hoped that this association—the Medical Society of the State of California—may with one voice unite its influence in obtaining the passage of the law desired. The interest of the entire State is associated with the interest of San Francisco.

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In furtherance of this object I ask to lay before this society and recall to memory the accompanying argument for hygienic improvement. The two articles appeared in the *California Medical Gazette*, October, 1868, and March, 1869.

I believe they establish my claim to priority in suggesting the use, for sewerage, of the pure salt water of the ocean; firstly, by lifting it with steam engines to an elevated reservoir; secondly, by dispensing with the cumberous sewers now used and replacing them with sewers of smaller caliber; and, thirdly, by flushing these pipes by the water of the ocean, precipitated into them under pressure of an elevated reservoir. It is true that sewerage is not a very agreeable subject to consider; even the thought of it appears to excite unpleasantly the olfactory organ. But if its influence on vital statistics be estimated an idea may be had of its importance to those whose vocation binds them to a city life.

The action of malaria is by no means confined to the production of intermittent or typhoid fever, cholera, and other acute zymotic diseases. Besides these and numerous subforms, its toxic effect upon the entire population of a city or other region, is worthy of consideration. This effect is the more important because it does not necessarily involve the idea of actual disease. The poisoned individual is not yet completely sick to the degree that he stops his avocation and has recourse to his physician; or struggles manfully to evade his doctor and escape the fancied "caught a cold" indisposition. I contend that this state of things, or rather of feeling, is more dangerous and deleterious to a population than a positive, sensational epidemic. It is all the difference that there is between an insidious, undermining foe, and an enemy who presents himself in force and openly says he means destruction and death.

When a miasmatic epidemic prevails the entire population suffers; some die; only those blessed with a peculiar idiosyncrasy or natural exemption escape. How much this last very small class loses cannot be calculated; but, I venture to say, they

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do not enjoy entire immunity. Hence it is that I may repeat, "the entire population suffers." Now it is the value in money that this malarious force, acting to poison and degenerate the vital force of individuals, and thereby depreciate the effective force of a population, calls for an estimate. This valuation cannot be mathematically given in figures. A sufficient approximation may be attained to give an idea of its costs to the community by explaining firstly, that the strength of the body in health is derived from the food. The aliments ingested as nutrition are converted into force, heat, motion, or vital energy, precisely as the fuel consumed by a steam engine communicates to it the power it exerts. Second, the action of the malaria is positively to diminish the animal forces. Malaria is a poison which produces debility. The individual, poisoned by minute doses constantly repeated, gradually fails in strength, although he may not fall actually sick. To a good observer, however, his general mien betrays the fact that he is deteriorating from an inward invisible cause. Now if we should rate this loss of strength as one-eighth of the whole normal vigor of the individual, it is plain that one-eighth of the value of all the food consumed as aliment by the whole population is wasted. By estimating then the amount of money spent daily in a city on food, one-eighth may be deducted as the daily loss or cost of the malarious impregnation. But it is more than this sum, for persons thus affected or poisoned feel that their food does not supply the usual and expected strength; these, ignorant of the cause, buy more food, expend more than their nourishment requires, to make up the difference, and thus augment the monetary value of their loss.

Again, the rate taken of one-eighth loss is, in a very large number of cases, too small for many individuals, and especially the naturally strong, energetic and defiant of their indispositions, will lose one-quarter or one-half of their strength, before the warning of their gradually increasing debility will be heeded. It is some of these whose sudden demise as is usually stated "in the fullness of health," creates so much surprise.

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In that condition, though feeling weak, they still strive on, until some trifling accident touches the scale-beam of life, and they suddenly succumb. With some others the gradual debility only appears; they die, and all that is apparent as "cause of death" is anemi. The disturbance in society is perhaps still greater in regard to children. They are fed, and fed, but they do not flourish. The food is changed—anything or everything is bought to feed them. Nothing suffices—everything is devised, but still there is no peace at home. Estimate all these things in figures and you will learn the value of malaria, and form an idea of the per diem cost to the population of a city.

This calculation is for a city during a comparatively salubrious season, such as San Francisco has enjoyed the present year, for no acute epidemic has prevailed.

I am not one of those who apprehend the invasion of cholera from abroad. The temperature of the season in San Francisco has not been favorable to its generation or propagation. But it would be wise to take advantage of the fear and anticipation in the public mind to obtain and establish those extensive works for the prevention of disease which require skill and time for their construction. It is for this reason that we would now urge the subject upon an enlightened Legislature. For the general sanification of San Francisco on an extended scale, a Board of Public Works has become a public necessity—a board is demanded which shall possess educated skill, and be independent of political influences.

Disinfection is wise; but it is certainly wiser to maintain salubrity by prevention. The prevention of decomposition and its arrest, is more important than the cure of the evil after it has been created. This prevention can only be accomplished by the systematic action of a Board of Public Works.

The approach to a computation is for a salubrious season when no acute or alarming epidemic prevails.

How long the desired relief shall be delayed will now depend upon our Legislature; or, until the city shall be dis-

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franchised or liberated from Legislative action. It is, however, not a little surprising that while San Francisco is surrounded by the ocean and bay of the Pacific she cannot employ its waters to maintain the health of her citizens.

In the meantime, while deprived of the flushing power of the great preventive—water—it is necessary to find relief in disinfectants. Their efficacy is limited by the insufficiency of the supply. Thus, the report of C. Junghaus, commissioned by the Directory of the German Chemical Society at Berlin to disinfect the battlefields around the city of Metz, shows that with great freedom of means and supplies, disinfectants enough could not be procured. Terrible as was the slaughter of men and horses in those battles, the proportion of disinfecting materials required was small as compared with the supply required for the daily sanification of a large city. (See the *American Chemist*, September, 1871.)

Science is indebted for a full review of the antiseptic system by Sansom, 1871, wherein, in addition to the disinfectants already mentioned herewith, are the sulpho-carbolates. Full justice is done in this work to the astonishing properties of carbolic acid.

I have now to suggest another remedy to the inconveniences of sewerage, which I believe would prove both cheap and limited in its supply only by the limits of the demand. I am not aware that the suggestion of its use as I propose to apply it has yet been advanced. This is the production of ozone in sewers by electrolysis. The great efficacy of ozone, or oxygenated oxygen, as a disinfectant, is known, as well as its use on a small scale in the wards of hospitals; so is its production by the decomposition of water with the galvanic current; but its generation in large quantity in the midst of sewage, and from the waters of the sewage itself during their passage through sewers, has not yet been proposed.

I have had no opportunity to make experiments, nor the time to employ in expensive operations, but I see no reason why the experiment should not be a success. If the proper

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wires were laid in the sewers, with suitable interruptions and efficiently managed, large volumes of ozone might be generated at the points of the electrodes, and the ozone thus produced would be conveyed with the current of air in the upper portion of a sewer. It seems that where all the materials are so cheap such a system might be kept in constant operation. I therefore lay the suggestion before the society.

[From the California Medical Gazette, October, 1868.]

SEWERAGE IS THE MECHANISM BY WHICH THE SEWAGE OF A CITY IS REMOVED.

We propose, with your assent, to devote a few articles to the discussion, in your journal, of the important question of the system of sewerage now in use in this city. The defects of this system are an active cause of disease. The foul emanations from the sewers carry many a strong man, many a fair woman, in the bloom of health, and still a larger proportion of young children, to a premature grave. Even though the injury to health were less destructive, the offense which smells so rank, forcing all who walk upon the streets to inhale the sickening gases of such pestilent putrefaction, is an insult to civilized humanity. Such an offense would justly revert upon the municipal government, if tolerated after the remedy shall have been suggested.

While all minds have been alarmed from the fear of cholera; while sanitary measures are loudly called for, to clear away superficial nuisances, of very secondary consequence; while pamphlets are published and nostrums invented to cure the cholera; while quarantine exactions are proposed, to arrest the march of the dreaded pest from Asia, via Panama or China; while the city's estimable health officer is hurrying from street to street to combat selfish and reckless landlords or tenants, recommending new sewers ad infinitum, and regardless of cost, there are few who perceive that the most fertile source of cholera, malarious and epidemic fevers, small-pox inclusive, and

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scores of contingent diseases, is to be found in the mismanagement of the sewerage of the city.

There is little need to look to Asia for our cholera; we have an efficient and active manufactory of the article in our very midst; and every new sewer built under bad regulation goes to "pile on the agony steeper."

A thoroughly organized system of sewerage is indispensable to all large cities. Previous to the adoption of a process of drainage, at enormous expense, in Paris and London, the ratio of mortality by endemic typhus and typhoid fevers was vastly greater than that of the present report. By the construction of those immense works, public sanitary institutions have required less outlay, and countless citizens have been spared the expenses and losses incident to sickness, as well as the pain of death. If such statistics could be calculated, it would appear that taxpayers would realize a great economy, irrespective of the comfort of pure air to breathe, by maintaining a perfect sewerage, no matter how great the cost of construction. It is, however, more requisite in the conduct of such a system, to observe a perfect discipline in its daily working, than in its primary construction. In vain may engineers construct the mechanism, if afterwards the trustees neglect and mismanage. Herein it is that the authorities sin. Were even the sewers we have properly cared for, a city of only seventeen years' existence, daily ventilated with the pure air from the ocean, would not resemble, in its noxious effluvia, such old and crowded cities as Paris and London, before their sewerage system was introduced. Be this as it may, we have before us, in London and Paris, the lesson of the almost incredible expense incurred by the neglect of due precautions to protect health in earlier years. Let us then accept the costly hint, and establish the best system which can be devised, while yet the city is young and small. Already the grievance of narrow streets is calling for and receiving reform. Let underground and street improvements, which concern the general welfare, progress pari passu, in equal movement with the

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admirable improvements of private enterprise. What will avail your elegant superstructures, if the underworks and foundations are unhealthy and unsound. The malarious exhalations which generate endemic maladies, as they exist in San Francisco, by their continuousness, their insidious gnawing into the life-source of health, or in other terms, by tainting through weakly poisoned air the atmosphere which enters the lungs for human respiration, hurry on to early graves more individuals in two years than would an invasion of Asiatic cholera, with its demoralizing influences, in as many months. The action is slower, and from the apathy which slowness begets, still more certain in its deadly influence.

In order to estimate justly, not the merits but the demerits of the sewerage, as now conducted, it is desirable to explain the present system; then criticise its working; and finally, indicate the remedy.

Through all the principal streets, large brick sewers are constructed, measuring three feet by two feet inside measurement, and one foot in thickness. These sewers descend to the bay, with a dip as favorable as the lay of the land and the grade of the streets will permit. This dip, however, in the low portions of the city, is very slight, and in some places quite insufficient for quick drainage. Along these sewers, at certain intervals, large openings or man holes are built, to permit men to enter and clean out the accumulated mud and ordure. At the corners of the streets other openings, called traps, are constructed, that surface water, rain and street washings may enter. These traps are ingeniously built, with a central partition to form a water valve, which prevents air in the main sewers from escaping in the streets, while the street water may enter freely into the sewers. The action of these water valves is excellent while the traps are kept in order. When filth accumulates, however, the water is driven out of the valve, and a putrefactive mass is gathered in the bottom of the trap, through which the gases in the sewer can permeate and infect the streets. To free the traps when they

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become clogged, men are employed to shovel out this putrid mud, as may be frequently seen at the street corners. Large piles of this mud, which the sewers are constructed to carry of, never to be seen again, nor smelt, after once entering them, are strewn upon the street for hours, disseminating putridity and disease, until other men with carts shovel it up again into their vehicles; thus, by dividing it up, giving it a thorough ventilation, as though to sanify it, and again whirling its noxious effluvia into the air, and the noses of the faithful taxpayers, who pay so dearly and yet so cheerfully for the epicurean privilege. Aye, the open cart carries away the mud, scattering far and wide its baleful aroma; the nose absorbs the flying pestilence; and by and by another vehicle solemnly removes a victim of a wretched and pernicious system.

All the sewers, as thus described, are intended to empty their contents into the bay along the wharves at North Beach, in Mission creek, in Islais creek, at South Beach, and so on, as the natural inclines of the soil permit. Does the result fulfill the intention? We will presently show.

To deprecate that which exists when no improvement is offered, may be considered unworthy; but if the propositions advanced are not fairly sustained, then let us receive the punishment due to our temerity. Having thus given a general idea of the present system of sewerage, its defects will soon appear.

Of what avail are these vast brick canals under the city? Their immense cost is already realized by land owners, and can be rendered more apparent only by statistics. During the months of drouth, very little water but the waste of the water companies and the washings of houses, enters. This quantity is insufficient to wash away the accumulations. It is still worse in the traps, which are quickly clogged, and which, without a constant supply of water to form the water valve, become outlets for effluvia throughout the city. Were it not for the winds from the ocean, this fault in the sewerage would render the air insupportable. At night, when the atmosphere

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is at rest, the odors from the street corners are still more perceptible. The insufficiency of water in the main sewers permits their contents to mingle with sand which enters them, and form a thick paste, which moves sluggishly forward or is entirely detained. Thus putrefaction has ample time to generate foul gases. These, of course, occupy the upper portion of these large canals, which conduct them most effectually throughout the city. As the water flows downward, the counter current of gas receives a pressure which forces it rapidly upward. An exit it must and will have; return it cannot, and consequently it finds its way through the lateral pipes and drains into the houses. It rises to the highest elevations of the sewers; and in that manner the high lands, which are selected for their healthfulness and freedom from malaria, become as much infected as the low grounds of the city. In every residence where the lateral sewers are neglected, or unprovided with traps or water valves, the noxious odor penetrates, often to a degree to produce nausea and vomiting to the occupants of basements. This is the fruitful source of fevers, putrid sore throats, and many eruptive diseases. Were the main sewers provided in all seasons with an ample supply of water, their accumulations would be rapidly washed to the bay, and putrefaction have no time to establish itself. At no time are these vast sewers more than one-third occupied by sewage, seldom as much; the remaining two-thirds is filled with the gaseous products of putrefaction. We have shown that these would be greatly diminished if the sewage matter were carried off faster; but being produced they would be rapidly forced out of the way, if two-thirds the calibre of the sewer were not provided for their accommodation.

The only apparent reason for these immense subterranean channels is to allow men to enter and clean them; but a rapid stream of water obviates this necessity.

The outlets of the sewers are often uncovered at low tide, and the discharge from them spreads far and wide on the

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shore, exposed for several hours to the sun, while awaiting the flood-tide to wash them away. Thus is created a new source of infection. The air in the sewers being warmer than the external atmosphere, ascends the sewer, while the air from without follows. The gases, therefore, receive another impulse besides that already mentioned, and are injected through the side pipes into houses and the elevated portions of the city. Happily for us, then the sea breeze comes to our aid and fills the role of scavenger.

Imagine every street of this widely expanding city channeled beneath with brick cylinders, two-thirds of whose area is filled with blood-poisoning effluvia, which circulate under pressure, and find egress into the atmosphere through every orifice, every leak and every pore. A foot thick wall of brick and cement does not restrain them. Out they must, and if no outlet is given they will permeate the wall and transpire through the soil. These cylinders act like retorts and generate the vile gas from their own obnoxious contents. Imagine then this vast distillery of pestilence seething its vapors beneath your soil, beneath your houses, beneath you beds, evolving them day and night without intermission, intoxicating every breath you inspire with a fractional dose of poison. You will begin now to comprehend why a sudden congestive chill has destroyed in an hour or a day some young and beautiful woman, in the joy and bloom of life. You will perceive why some hale, strong man, who has received some injury from which his natural strength would enable him easily to recover, is suddenly seized with rigors or chills, followed with a raging fever, and perhaps erysipelas, and in a few days dies, or is rescued with difficulty. Again, you will understand why little children of unexceptional parentage, in the perfection of health, clothed with perfect propriety, nourished in the best manner with the most careful choice of food, are suddenly seized, perhaps in the night, with croups, with inflamed throats, with convulsions, and in a day or two are borne to the cemetery. Why should such children, with perfectly normal

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constitutions, enjoying without stint a wisely directed physical education, defeat the law of nature and prematurely die? It is because a poison has been inhaled into their blood through the lungs, which has slowly and insidiously intoxicated the vital fluids and the brain, until the system becomes fairly saturated, and then follows the sudden explosion of disease and rapid death. The vital fluids have become altered by a contamination which parental solicitude has neither perceived nor understood, until death's climax is at hand, and medical skill, however rationally applied, has no time to alter the fiat. The other minor causes of children's disorders are incompetent to work such havoc in so short a period.

The assertion is not advanced that all such occurrences depend upon the sewers. This peninsula was subject to malarious diseases before those indispensable canals were laid. But natural miasms of the soil bear no ratio to those artificially engendered and propagated by a badly organized sewerage. Hence is the increase of mortality in a greater ratio than the natural increase of population. As we sow we may expect to reap; but it is discouraging to be answered, when we venture to boast that the improvements in medical science have increased the average length of human life, that the mortality record proves the reverse. Of what avail are improved surgery and more enlightened medicine, when another enemy, of man's own creation, enters the field to make impotent our skill.

The construction of these immense canals, called sewers, is conducted according to a statute or arbitrary ordinance, which leaves to the Street Commissioner very little room to exercise his own discretion. The ordinance is inexorable, and sewers are laid in small streets of the same dimensions as in large ones. There are alleys whose perfect sewerage could be obtained with twelve or eighteen inch pipes, and oftentimes by dipping from the center of the block both ways to the adjoining streets, might be placed nearer the surface. The diminution of time and expense must be apparent. But no; a great

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putrid gas chimney must be laid, to retain and distill the pestilence.

THE REMEDY.

Costly as may be the remedy of these evils, it has become indispensable to the public safety to seek for and apply some curative process. The public health is the most eloquent appeal to the taxpayer. With the new system to be proposed, the heaviest expense is in the first inauguration; after which we hope to show that a great diminution of the current expenses will follow, and the enormous sum saved in the construction of the sewers will in the end effect a decided economy.

The great remedy for all this distress is water, and the mode of its administration is the cure. Irrigation in abundance, incessant both in summer and in winter, applied under a system of perfect discipline and continual watchfulness, will deluge the nuisance, and wash it to the sea before it can become an instrument of misery and death. Fresh water from the water companies is too scarce and too dear; but salt water in abundance is in the bay, and costs nothing but the trouble of its use.

There are two modes of application: Firstly, to construct reservoirs upon properly chosen elevated places, and with steam engines pump up the water, and thence distribute it into all the sewers. Pipes may also pass through the sewers, which pipes, supplied at intervals through their course with irrigators, and constantly discharging jets of water, would effectually prevent the formation of accumulations or clots. The reservoirs need not be large nor expensive, for as there is no object to detain the water, but to let it rush off as rapidly as raised to the proper elevation, only small tanks would be required. Or, secondly, the water might be ejected directly through pipes supplied with irrigating jets, and running upward in the sewers. The objections to this plan would be the inequality of the pressure on the pipes, and the inconveni-

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ence of their bursting in the sewers. The reservoir system secures greater evenness of pressure. Where there is no necessity to maintain large supplies of water, neither the engines nor the reservoirs need be of such great capacity and cost as those used in the hydraulic operations of the city of Philadelphia. If, however, such immense machinery and such vast enterprises are undertaken in Philadelphia and New York to maintain the public health, by supplying pure water for healthful nourishment, why should not San Francisco protect its health by supplying clean water to wash away the causes of pestilence and disease.

The introduction of the water system cures in an instant the evil at the corners of the streets. An irrigator attached to every water valve or trap (water valve in their present condition is surely a misnomer, for they rarely receive any water), immediately cleanses the traps, leaves the water necessary to form the valve, and thus only can prevent the exit of gases. What, now, becomes of your men digging filth from the corners and the man-holes?—the heaps of sewage on the streets?—the open carts fanning the air with noisome stench? They all vanish, *presto;* the irrigator keeps these effluvia where they belong, and the rapidity with which offal is carried to the sea prevents its degeneration by putrefactive decomposition into pestilential vapors.

What would London pay for our facilities for the removal of offal? Elevated grounds for a head of water, every tidal wave giving streams of crystal water from ocean springs, the Golden Gate as discharge-pipe only a few miles off; and yet, those facilities, placed so easily within our reach, are disregarded.

To facilitate this copious irrigation, the aqueducts should be of a size to concentrate the offal, and enable the jets of water to play directly upon it. They should have a pitch, to obtain the greatest possible velocity to the flow of the stream. They should have abundant space for their contents to flow without exerting pressure upon them, and also room for some unavoidable gas; yet there should not be space for the volumes

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of gas which would be evolved from decomposing matter detained in the tubes; but as there should be no detention of the sewage, so, also, will there be but little evolution of the gas. Tubes of iron of eighteen-inch caliber would suffice for mains; or if, on trial, Skinner's sewage pipes prove sufficient, they offer advantages over iron or brick. They can be perforated smoothly to admit lateral tubes, and are cheap. Such aqueducts can be laid nearer the surface, and thus where the incline of the land is slight, a better pitch for the pipes be obtained.

Any one who will calculate the difference of cost in this process over the enormous expense of three feet by two feet brick sewers; the time, labor, and street obstruction they cause; will now discover the eventual economy. The new system, by requiring engines and reservoirs, appears to threaten the city with a new debt. It is shown, however, that there is economy in every step.

Another advantage to be derived from using small aqueducts, is the relief immediately given to the low lands where there is little or no pitch, as below Montgomery street, along Mission Creek, and in Hayes' Valley. The terminus of the aqueducts in the bay can always be carried into deep water, below low tide, and thus form a descent. The upper termini of the tubes are always in elevated places. When now the water descends with force, it must drive all the sewage in the horizontal portion of the aqueduct before it, until it meets the last descent into the bay. Again, as the outlet in the bay is always submerged into deep water, there will be no accumulations of black putrescent filth along the shore, nor effluvia to infect the air.

As regards the upper termini of the sewers, an apparatus can be attached to them by which all the gases in the tubes may be rapidly attracted upward and be consumed. By finishing the aqueducts with a horizontal cylinder of iron, which passes through a furnace and terminates in a chimney at right angles to it, a powerful upward current of air will be estab-

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lished, and be burnt as it passes through the heated retort. As the retort merely passes through the furnace, these fires may be made useful for various purposes in the arts.

Another source of income to diminish the expenses of this system may be derived from the reservoirs. These bodies of water can furnish power for turbine wheels, and thus promote many industries which do not need much motive force.

In order to derive the utmost benefit from the reservoirs, and as an extra precaution to prevent the water valves at the street corners from becoming obstructed, hydrants might be placed at these openings connecting with the main aqueducts.

Every two or three days an inspector should allow the water valves to receive a thorough washing. These hydrants may subserve another purpose—as street sprinklers they may lay the dust. In the event of large fires, the Nicholson and Stowe pavements, saturated with asphaltum, must infallibly burn, and by rendering the streets impassable, increase indefinitely the destruction of property. But if the streets can be flooded with salt water from the hydrants, these costly pavements may be saved. By using this expedient at fires, where the water by reason of its saltness cannot do extra damage, the expense of fresh water from the companies may be diminished.

Having discussed as briefly as the great interest of a subject made up of many details would permit, the question of irrigation and the sewers, as they now exist in the streets, the great home question now arises: the protection of the individual houses, not only from the effects of the retained sewage within themselves, but what is worse, the introduction of the poisonous gases from the main sewers of the streets.

But few observe that while they free themselves, at small cost, of their house and kitchen waters, through wooden canals under their tenements, that they are introducing a worse nuisance than the one they banish. From the very handy construction of these tubes, while they let a little stream of water out, they let a strong current of air in. The water

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companies and the gas companies watch with scrupulous economy any leaks or defects in their pipes, because every cubic foot of gas or water lost has a specific value; but the gases and waters from the sewers, being rated as of no account, are cared for by nobody. But that they are of immense account to somebody the mortality report is daily proving. The apparatus of sewerage should be as much a work of precision as the mechanism which enters well-conducted gas and water works. And if municipal authorities do not possess the energy, or think it undignified, to establish and incessantly watch such a system, it should be handed over to the tender mercies of a monopoly to profit by it.

Not a house, not a tenement should be unprovided with sewerage, properly managed and frequently inspected. There is no longer an apology for neglect. Landlords and tenants have both their health, money, and lives invested in the institution, and are alike responsible for the public safety. Usually the landlord throws the expense on the tenant, while the tenant throws back the shuttlecock upon the landlord, and meanwhile nothing is done. Something *is* done; the public and the press call aloud for better health, and the invalids say: "but doctor, why am I always sick? why does my malady relapse? is there, then, no *permanent* cure?" The profession answer: "No, ladies and gentlemen, because your blood is freshly poisoned every day, and the action of antidotes is not *permanent*.

To counteract, then, as far as may be, the infection of houses, water traps should be made in every conduit from the house to the main sewer. This precaution is easy now, for there are patent cast-iron garbage boxes, with water valves, which should be placed in every lateral sewer. These apparatuses are exceedingly efficient, and are provided, or should be, with movable galvanized iron filters to separate the solid from the liquid offal. These contrivances are cheap, and everybody should buy them. Unless, however, frequently inspected, they are neglected by reckless people, and the water is allowed

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to dry out. This is especially liable to happen in untenanted buildings. It is not difficult nor expensive to obviate such accidents by constructing somewhere in every lateral sewer, a wooden box water valve, holding eight or ten gallons of water. Thus, a box is planted in the ground, in some easily accessible place. The sewer pipe from the house enters this near the bottom; the discharge pipe to the main has its outlet near the top of the box; between, of course, a small lake of water is formed, through which the gases from the streets cannot pass. Again, into the upper part of the box introduce the rain gutter from the roof of the house. During seven months of the year the rain thus introduced keeps perfectly washed the water valve. No gases can collect, for the rain pipe conducts them all the year to the upper air. The large quantity of water these boxes contain, constantly changing, prevents their drying out, and is a guard valve which will amply repay its cost. The box should have a tight cover on hinges, to allow the inspector from time to time, once a week, to examine its condition.

The next important thing to look to is the *solid* offal, the vegetable and animal refuse of the kitchen. This should never be permitted to enter the sewer. The filter which separates it from the liquid garbage should be frequently emptied into a close receptacle and be daily removed. This substance is a fertile source of infection. It quickly heats, ferments, and putrifies. But nobody likes to smell it or to touch it. It is the grand bugbear of careless, indifferent, ignorant people. The more lazy they are to remove it, the better it punishes them when they must lose their sweet scented companion. Yet this substance is valuable to form a rich fertilizer of the soil. Thousands and tens of thousands of tons of valuable manures are lost.

Let us suppose a perfect system of management. Early every morning the house barrel is emptied, before putrid decomposition begins. It is emptied into closely covered carts; and thus handled, all the horrid odors which we now daily

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perceive, from filthy, open, disgusting garbage carts, which may be scented a whole block while they stand lazily ventilating themselves on the street, will at once be prevented. The prevention of decomposition prevents infection. Let these vehicles now deposit their contents at some common rendezvous where they are forthwith disinfected, and then converted into poudrette. This method presents another source of income to defray the general cost of sewerage.

Will you seek another source of revenue for the same great object? The fire insurance companies pay large bonuses to protect their policies. Their gratuities to the fire department have been great. The marine insurance companies expend immense amounts in salvage, and in ship surveys, to guard their risks. In like manner let the life assurance societies contribute freely to the sewerage fund.

Should the registrar of vital statistics separate, if it were in his power, all the deaths caused by malarious infection from the mortality roll, and suppress, if it were possible, this cause of disease, the decline in the record of deaths, and the consequent increase in the average duration of life, would astonish the actuaries of life insurance companies, and amaze the general observer. It is to the interest of every individual to be able to obtain life assurance at a low premium. Surely, then, a city which diminishes, by its sanitary precautions, the ratio of deaths, should enjoy the privilege of a lower rate of premiums than another, which neglects the principles of hygiene.

The discussion of this subject is by no means exhausted; but to conclude, for the present, the hope is entertained that the vital importance of applying a radical remedy to the evil as it now exists, and which cannot fail to injure the character of the city for healthfulness, to divert the immigrant from the settlement he otherwise would be disposed to make, and even induce families to break up their homesteads, will induce the proper authorities to give it the study it merits.

The inauguration of such a system calls for a special department in the engineer's bureau of the city. The work is

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beyond the competency of a street commissioner elected by popular caprice. An engineer's department, endowed with power, and supplied with faithful assistants and deputies, possessed also of ample funds, is far more capable to conduct a system comprising elaborate details and cultivated knowledge in a great variety of the departments of science.

[From the California Medical Gazette for March, 1869.]

The rain has fallen, and copiously enough partially to flush the sewers. Water is the only radical disinfectant; and, until a rational system of washing the sewers is introduced, with an unceasing stream of water descending with force and velocity, the rain must be depended on to obtain the desired effect. In the present state of the sewers and consequent health of the city, torrents of water for a week together are demanded; and were the clerk of the weather a reliable personage, we would have him deliver these torrents at night, in order to have clear days for trade and pleasure. As it is, however, we must be happy to receive the supply when it is awarded. Still, we may thank the clerk's discretion; for had the water descended in torrents—enough at once to cleanse the Augean stable—the effort would have been disastrous to the city in the extreme. The openings of the sewers along the city front are all strangled. The mercenary builders along this proscribed, though invaluable, line of the city, whose only thought and greed are high rents, have entirely neglected the substructure of the new improvements, and the termini of the sewers are far into the city, choked and broken, their contents having no other escape than to soak through the soil and blend with the ordure already present. But the most fluid portion only can ooze away in this manner; the balance remains to manufacture perfumery. This rises and diffuses itself, through the channels built to conduct it, over the city, and, as it were, irrigates the atmosphere. If, now, in this state of things, the rain had fallen in torrents and rushed toward the bay, it must have overfilled the sewers, and the backwater, loaded with infection, would have risen through

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the cesspools and overflowed that part of the city, perhaps as high up as Front street.

We ask permission now respectfully to touch on another subject. The bulkhead, so indispensable to commerce as well as to the formation of solid, available land inside of this wall, is now in course of construction. We contend that all that important part of the city extending from Vallejo to Market street, and condemned as "made land," can be made as substantial for buildings as the higher business portions of the city—for instance, Second, Third and Fourth streets. Especially true is this for earthquake-proof buildings, which will in future cover more area and have less elevation. Venice, with its marble palaces, its grand old Plaza, its lofty churches and towers, its massive halls of justice, is built in the water. Its residences are entered in a boat (gondola); an esplanade of solid hewn masonry receives the visitor; he ascends by a spacious staircase to the first floor (*piano nobile*), or reception rooms of the palace. All these enormous weights are built on solid hewn masonry beneath the water. The edifices are also entered from the streets, which have canals navigable for gondolas through their center. These canals have lateral entrances into the palaces. Why, then, should not our little city front be made an equally solid basis?

The construction of this bulkhead is consigned to harbor commissioners, who have intrusted the chief engineer's department to Mr. Lewis. Of the dimensions of this great wall we make no comment, for of course that scientific corps knows the better; but it is built by dredging a deep channel, not to bed rock, but estimated to be deep enough. This channel is filled with tons of rubble stone to a certain elevation, near to city grade, and time given it to sink and settle. When thus sufficiently buried, as calculated, in the mud to resist all motion, and stand its ground, the superstructure of massive hewn granite will be built upon it. A noble and costly work, though it may be feared that eventually it will serve only as a sort of brake to back the mud from a future wall to be built

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outside of it. Whether the engineers have estimated that the culverts for the sewers of the city are to pass through the rubble basement, depending on their dip, or through the granite superstructure, certes, up to the present time they have not expressed. It cannot be imagined that in the sectional contracts these outlets have been forgotten; but now, the bulkhead is an unbroken line, and every sewer, from Vallejo to Clay street, is dammed up. Before the rubble can settle, and the wall of hewn granite be finished, from two to three years may elapse. If a doubt existed as to their ultimate placement, could not at least temporary iron pipes, say twelve inch, have been let into the sewers, been secured with brick and cement, and carried through the rubble into deep water, to relieve at once the city from this destructive pestilence? It cannot be supposed, nor the idea admitted for a moment, that all this garbage, with its accumulating masses, can be allowed to fester there until the bulkhead is finished.

We would mildly suggest a procession of all the dignitaries of the city: First, the board of health; second, the health officers and staff; third, the board of commerce, whose president is president of the board of health, and necessarily deeply interested in the commerce of the city front; fourth, the board of supervisors; fifth, the harbor commissioners; sixth, the city engineers and surveyors; seventh, the superintendent of public streets; then a few interested in the public health, viz.: a deputation from the press, and a few of those interested in the health of their families. The procession shall form on the west side of Front street, facing east; the right flank resting on Washington street, the left on Clay. It shall march at noon, in sunshine, down the north side of Washington to East; cross East; countermarch up the south side of Washington to Drumm, carefully observing the streets; through Drumm to Clay; down Clay to East, and countermarch again by the south side of Clay to the place of rendezvous. The procession shall then halt, and, after snuffing carbolic acid or chlorine, consult. If they do not exclaim that it is the most atrocious, long-con-

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tinued neglect, in a civilized city yielding its thousands for taxation, with force to compel proprietors to do their legal duty, then will we forever cease to complain. Man-traps through planking, in which a man walking in the dark may step and break a leg, or perchance pass bodily down, are not to be mentioned; *there* is a vast open cloacum, with uncounted feet of the Washington street sewer twisted and coiled in the midst, like a dead anaconda.

While the anxious cry has been, "flush the sewers, disinfect the city, destroy the gases, carbolize, use chlorination, in mercy sanify the city," nobody has thought to open the orifices of the sewers into the bay and let their foul ordure out. Uptown, on unaccepted streets, if only a few cobbles are loose, an imperative order comes to fill the holes within three days, under penalty. No such order appears to have prevailed between Drumm and East streets, on Washington street. A voice may exclaim, "Why did not you say all this earlier?" The answer is: Two months' illness—malarious fever, down to a few degrees above zero, poisoned with the noxious airs we write of, almost to the brain's center.

While the anxious call has been, "Flush the sewers," the water company has reluctantly yielded its water. The *Times* announced that if money to any amount would stay the pestilence, in forty-eight hours the ever-noble and generous merchants of San Francisco would supply it. Had the water company exclaimed, "For forty-eight hours we will flood your sewers, only show us where the water shall enter; take half our supply, and for forty-eight hours let the people use half-rations," an endless gratitude, at small cost, would have been their reward. It grumbled, "*Franchise!*"

Let the city own the water floods; let the city welcome the immigrant to use the wharves without a toll-tax and San Francisco will flourish. Let wharfage on tonnage cease, and commerce will thrive.

It has required the ordeal of a fearful epidemic to awake public attention to this question of vital importance—of life

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and death—education—the rearing of youth with stalwart strength, or with impaired constitutions, from the incessant inhalation, from the cradle to maturity, of malarious and poisonous atmosphere. It is a question before which that of the earthquake committee, interesting and valuable as it is, inaugurated in the true spirit of national free inquiry, which only America understands and practices, sinks into a subordinate rank. In this age, structures are built for the present century, to let successors alter, without loss, to suit the improvements of the time, the fashion, and their own taste. Why build strong houses for short-lived tenants? It is a question which admits no delay. Seven months of "dry season" are near approaching. What was keenly felt in 1868 will be redoubled in 1869. *Prophylactics, i. e.:* remedies taken anticipative of disease, to parry its attack, are solicited and dearly paid for; as long as taking a pill or two will do, folks will bolt them; but when the great radical preventive is suggested, the sapient governors of public health, with millions of money, if necessary, in their coffers, will sleep in apathy—an apoplexy of mind, with insensibility to themselves, but full of death to the vitality, the commerce, the aggrandizement of San Francisco. If the city is the cleanest in the world, it will enjoy the possession of the cleanest immigration; if reputed unhealthy and redolent of villainous odors, it will only receive the least desirable population. If the city fail to sustain its repute for health, daily fanned with pure air from the ocean, it will require but a slight deviation in the great current of trade, and it, like Venice, will sink into insignificance. A few years ago, one hundred dollars per annum would permit you to hire in Venice a marble palace. India, China, Japan, Australia, Oceanica, will pour their wealth in vain; the city will wither, and its prestige be lost.

The true fault is in the fact that no rational system of sewerage has been thought of or adopted. To run costly channels through the city, and make money on contracts, appears to have been the prevailing idea.

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The only recource is to create this system, as suggested; build reservoirs on elevated sites, with engines; pump water from the bay at flood tide; establish a net-work, like arteries, of canals of small caliber, and let the water from the reservoirs rush with velocity through them. The process is simple, far more effectual, infinitely more economical, and the result absolute—the certain sanification of the city.

The last paragraph of our former article is now quoted:

"The inauguration of such a system calls for a special department in the engineer's bureau of the city. The work is beyond the competency of a street commissioner, elected by popular caprice. An engineer's department, endowed with power and supplied with faithful assistants and deputies, possessed also of ample funds, is far more capable to conduct a system comprising elaborate details and cultivated knowledge in a great variety of the departments of science."

The initiation of such a system is simple. Its indispensableness is not a question. The ultimate economy must be obvious. Short discussion can decide a truth so manifest. The influence of the board of health, sustained by that of the board of commerce, will so convince the board of supervisors that after small debate that honorable body may order the formation of a board of sewer commissioners, and the obstacle will be surmounted. The Legislature cannot fail to confirm their action. The most important feature of this operation is the formation of the board of commissioners. They will appoint their own chief engineer. We want no electoral candidates, but educated and experienced scientific engineers, selected from the best the United States possesses. We want the Alexanders, the Williamsons, the Kirkwoods, the Julius W. Adams', the Chesbroughs. With such a corps San Francisco may be sanified, and not a cent more be expended than the actual requirement. The honor of such officers stands higher than mercenary thirst.

By a most opportune good fortune an authority has been presented which will carry more weight than can the testi-

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mony of a writer who enjoys no influence of wealth, political position, or general popularity. As amply as the space allowed will permit, this authority will be quoted. It bears with it the incontrovertible evidence of experience and perfect success.

THE BROOKLYN WATER WORKS AND SEWERS:

[Prepared and printed by order of the Board of Water Commissioners, with fifty-nine lithographic plates. 1867.]

The article "Sewerage Works," in this volume, is that which interests San Francisco. As long ago as 1857 commissioners were authorized to prepare a SYSTEM. James T. Kirkwood, author of this treatise, was appointed to prepare this system. Julius W. Adams, having been engaged subsequently, digested the plans, and is truly author of the work.

The existence of this work was entirely unknown to me when my suggestions on sewerage, published in the *Medical Gazette*, and in the *Times*, October, 1868, were presented; nor am I indebted to any one whatever for any hint upon the subject.

In Brooklyn, previous to 1857, five and a half miles of sewers were built; but not with a view to receive house drainage. They were built large enough to admit men to clean them. The scantiness of water, and the want of dip in the soil, prevented the use of other measures.

The introduction into cities of large supplies of water has obviated the inconveniences previously suffered. Quoting from the report of Mr. Kirkwood: "This change consisted in the introduction of SMALLER SEWERS, the sizes of which were governed solely by the amounts of sewerage and rain water to be passed at any given point; their enlargement beyond the requirements above mentioned, was considered. unnecessary and otherwise objectionable."

It appears that long and sharp controversies occurred among English engineers upon this change of system. In the meantime PIPE SEWERS were introduced, and this only served to

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warm the contest, as it brought in the interests of *brick* versus *pipe*.

Finally the rational system prevailed, and in accordance with the nature of location and volume of material to pass, sewers or pipes, large or small, *but calculated to the special requirement*, were adopted, as a competent engineer or a board of engineers decided.

Mr. Kirkwood again says: "As regards the necessity of entering sewers, which was dwelt upon so much ten years ago, the successful use of small sewers shows that this necessity does not exist; they have been found safe and effective when properly built, and less troublesome as regards cleansing than the old sewers."

The volume and velocity of the water save herein many thousands of dollars in those expensive entrances called "manholes," constructed as they are of brick, curbed with hewn stone, and *decked* over with heavy iron covers. Again, we are spared the lamentable, the sickening evidence that man may become so poor, or so criminal, that he is compelled to descend to such depths to earn his daily bread.

Kirkwood, in his compliment to the ability of E. S. Chesbrough, city engineer of Chicago, says;

"In Chicago, where pipe sewers of twelve inches diameter are used, with an inclination of one to five hundred, tanks on wheels, wherewith to flush them occasionally, have been used. *Where, however, the leaders of dwelling houses are connected with the house drains, this precaution has not been found necessary.* * * * The house sewerage spoken of above does not include rainfall, for in this city (Brooklyn), and in all cities within the limits of grade mentioned, the daily flow through the drains must be able to keep them free, independently of any aid from rain."

This fact controverts all assertions that house drains should not be permitted to enter the street sewers. They are an advantage, and this independently of rainfall.

It is conceded that "the greater the concentration of the

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minimum flow (of the sewerage), the greater will be the carrying and cleansing power in a sewer of any given inclination, and the concentration being greater as the sewer is smaller, the minimum sizes of sewers practicable" are to be calculated.

An admirable comparison, too long to quote, between the strong, glazed earthenware pipes, of twelve, fifteen and eighteen inches in diameter, used in the Brooklyn works, and brick sewers, may be found in this Report (Kirkwood) on Brooklyn Water Works and Sewers, page 84, and in which the *glazed pipes* are proved to be far superior.

Those intimately interested in this subject will find invaluable information on pumping engines and the lifting power to reservoirs in the above work.

Any comparative computation of relative cost would be now unavailable. All enterprises of magnitude require in their incipiency a large expenditure of capital; but when they have been rationally devised, return in the end profitable dividends. To any one who will make estimates, it will be apparent that the rational system, with its order and precision, cannot fail to effect a great economy.

Those who hereafter receive a city with a perfectly organized sanitary system, will be very well pleased to pay their share of the bonds.

It may, notwithstanding, be of interest to make some extracts of the cost of the present system—an amount expended as much to engender disease, as to carry off the refuse of the city. It will bear witness to the advantage of a faultless scientifically organized system, and the present defective caricature institution.

The Report of the street superintendent, in the Municipal Report of San Francisco, ending June 30, 1868, states that there are of sewers thirty-eight miles, costing, for 1868—

Brick sewers	$237,798 45
Redwood sewers	47,423 73
Total	$285,222 18

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The whole cost of sewers since their commencement in 1858-9 to June 30, 1868, is $1,500,937 18.

This gives for thirty-eight miles, per mile, $39,498 34; or, per lineal foot, $7 48.

To these sums must be added the cost of cesspools and man-holes, viz: from $150 to $175, gold coin, each, for the former, and $50 to $75, gold coin, for the latter. At the rate of four cesspools at the street intersections, the amount may be easily calculated. Observe an economy in the rational system. Man-holes are dispensed with; the cesspools, now so defective, may be entirely changed and diminished in size: thus, to an iron hydrant may be attached an iron basin, of large size, inserted in lieu of cesspool mouth. This would be followed with a large S-shaped water valve, say ten or twelve inches in diameter, and communicating by iron or glazed pottery-pipe with the main sewer. In this same hydrant could be managed an offset-pipe, to serve for street sprinkler.

In iron castings, then, of one or two pieces, the whole apparatus may be condensed, and connecting with the water supply falling with velocity, would keep perfectly clear, and the S-shaped valve or trap be never dry. Such castings would not cost more than $50 or $75.

The addition of street sprinklers to this system, which can be attended with the same punctuality as lighting the gas-burners in the street, will economize to merchants, by "laying the dust," uncounted thousands of dollars, add to the salubrity of the city, and render the promenade on the streets, in windy weather, vastly less intolerable.

DISINFECTANTS.

Water, administered as stated, is the only *radical* disinfectant, because it immediately removes the substances which engender effluvia. It may be said that a bucket of sewerage cast into a sewer on Taylor street, under the new system, will, in fifteen minutes, be in the bay. Under such rapid action no foul gases can be generated.

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Ventilation with Atmospheric Air.—Except the above, all disinfectants are but partial in their influence, and inefficient. Before the rational water system can be inaugurated, an indefinite time must elapse. It is only to obtain relief in this interim that palliatives must be resorted to. A current of atmospheric air may be constantly maintained through the sewers, by establishing at the lowest discharge end of these canals, ventilators such as are used in the great oriental steamers. These, well guarded from injuries by malicious mischief, will admit air in abundance, while the draught may be accelerated, by constructing at the most elevated and remote termini of the sewers, tall, galvanized iron pipes or chimneys.

Chlorination—Chlorine, as a disinfectant, is valuable in the small way. It may be used in houses infected by small-pox. It destroys all infectious gases, but is itself destructive and highly poisonous; hence, if liberated in excess, through ignorance or carelessness, in tenements where there are many residents, especially children, it might easily prove fatal. Its chief objection is that it only destroys the existent emanations. It does not prevent the generation immediately after of more from the same source. The benefit derived therefore from this agent is exceedingly transient. Derived from muriate of soda (common salt), by the chemical action on it of oxide of manganese and sulphuric acid, it is very cheap. In itself it costs but little, but add to that cost the expense of apparatus to generate it and diffuse it, the salaries of the agents who administer it, the toil and trouble to keep up constantly the supply, and it will be apparent that the combined expense would be a very heavy burthen.

Again, how can the health officers hope in this way to neutralize the effluvia produced and retained in thirty-eight miles of sewers?

Carbolization.—The employment of carbolic acid must, like the former, be limited, though it possesses a wider range of utility. It is infinitely more managable, and almost without

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danger. It has also a more permanent effect upon the gas-producing agents it meets in sewers in arresting their decomposition. There is nothing offensive in its emanations, or but very moderately so. Were it indispensable to prove its disinfectant power, the writer would not in the least fear to put on the clothes in which a small-pox patient had succumbed in sixty hours after his death, or in the time necessary to apply the substance properly, wash, dry and iron the garments.

To apply carbolic acid as a sewer disinfectant would probably be a failure; but where flushing is attempted, from casks mounted on wheels, we think seventeen ounces of pure acid to two hundred gallons of water would render the fluids it encountered disinfected. For all the water pipes leading through houses and included in the plumber's department, its free use is invaluable.

Sulphite of Lime.—"The agents of the board of health of London find no disinfectant for sewers so quick and certain in its action as Macdougal's—the chief ingredient of which is *sulphite of lime.*" (See T. K. Chambers' work, "The Indigestions," p. 261, 1867, London Ed.)

Preventives to Malarious Infection.—The best of all preventives is a well regulated state of health, obtained and preserved by moderation in all things, both intellectual and physical, which appertain to the vital functions. The strong and the weak are all liable; but those who have studied and lived up to hygienic principles, and especially as regards the digestive organs, may oftentimes live for years in marshy regions or unhealthy countries, while those addicted to excesses yield early to the malaria. We think the assertion may be ventured, though not aware that it has been previously stated, that the malarious poison may be generated within the human body. If large accumulations of digested matter are allowed to remain in the abdominal organs, and the proper degree of animal heat be excited to produce decomposition or fermentation, why may not the same results follow as during the hot months in paludal districts? Testimony to this idea is found

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in the rapidity with which many cases of fever and ague are cured after one or two lively cathartics, and with a very small amount of quinine. If so, let the inquirers for preventives turn their eyes inward.

The true idea of preventives is to apply a remedy or an antidote to the malarious intoxication while it may be feared that its germs or molecules exist in too small quantity sensibly to affect the health, but are awaiting the accession of other germs to produce an outburst of disease. Employed in this view they are of advantage; but otherwise their premature use is an abuse. Twenty or thirty grains of quinine have prevented many a Panama fever, but discretion in the general hygienic laws have parried still more attacks. Both the wise and the foolish may learn more of this in the graphic article on Panama fever in the December number of Roman's "Overland Monthly."

When, however, preventives have been steadily used for a length of time, quinine, old Bourbon, and vigorous diet, and finally the malarious infection, equally steadily absorbed, triumph; then comes the tug of war—the enemy finds his victim without ammunition, and destitute of provisions.

Hercules appears known only for his physical strength, but he must have been equally renowned for his strength of mind, and ability as an engineer. When invited by the King of Elis to cleanse the Augean stable, which baffled all other skill, he performed the task in a single day. The record does not state the time, money and men Hercules employed to canal the mountain lake, or divert a river from its course, to prepare his mechanism for the day given, when he suddenly let on his water with a rush, and flushed the premises.

It is as though it were simply related that a great and costly ship arrived in San Francisco harbor. In a great storm she had broken her vast ribs on the rocks, and was sinking.

When the renowned giant, Von Schmidt, in an hour lifted the ship clear out of water, so that workmen, dry-footed, went

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under her, and mended the rent, when the giant gracefully replaced her in the sea, not a word is said of the time it took to build the dock.

How joyfully will the San Franciscans assemble to celebrate that given day when the powers that wield the strength of the city shall invite them to witness the first flush of the sewers on the rational system.

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PRACTICAL MEDICINE.

By HENRY GIBBONS, Sr., M. D., of San Francisco.

Since the revival of the State Medical Society and the appointment of the committee a year ago, California has enjoyed an unprecedented exemption from epidemic and destructive disease. By a law, singular as it is inexplicable, the pestilential diathesis which reigned two years since, when small pox and other maladies swelled the bills of mortality to a fearful extent, has given place to the opposite condition, with a death-rate remarkably small. That a pestilential storm should subside into a normal condition of the public health, would be nothing remarkable. But something more takes place. The ordinary causes of disease are reduced below the normal activity, or the human constitution is endowed with superior power of resistance. The case presents an analogy to the thunder-storm, the violence and devastation of which are succeeded by a period of extraordinary repose and purity.

Whether the law holds good in perpetuity—whether a period of mortality is followed by one of health, and the latter by another of mortality, and so on—is a question of great interest, especially with regard to the future. It appears probable that the condition of the public health in any given region, as measured by the death-rate, is continually oscillating between the two extremes, forming cycles of a few years' duration; and that, besides these minor oscillations, there are great cycles, measured by scores of years and by centuries, in which the human constitution, the world over, undergoes a gradual revolutionary movement, modifying its relations to disease, and in

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which old forms of disease are changed or abolished and new forms introduced.

In the early years of the American occupation, California was visited regularly by a summer influenza, commencing in June and lasting one or two months. It was not confined to the ocean climate, but extended into the interior beyond the range of the sea winds. In several years it was well marked in the Territory, now State, of Nevada. Latterly it has declined, and the present summer passed away without the slightest trace of its recurrence.

VITAL STATISTICS—RELATION OF CLIMATE TO PULMONARY DISEASES.

The mortuary tables collated by Dr. Logan, Permanent Secretary of the State Board of Health, and those for San Francisco, published monthly and annually in the *Pacific Medical and Surgical Journal*, by Dr. Henry Gibbons, Jr., comprising the principal centres of population and taking in something less than one-half the inhabitants of the State, furnish some interesting data. It appears that the total number of deaths in San Francisco, in the year ending with August last, was three thousand one hundred and twelve. Taking the Government census as the basis of computation, this shows a mortality of 20.7 in one thousand. If, as is generally conceded, the population be greater by at least ten thousand than the census represents, the death rate would be still further reduced. In either case, San Francisco may vie, in point of health, with the healthiest cities on the globe. The returns from the cities and towns in the interior exhibit a sanitary condition equally gratifying.

The climate of San Francisco is generally thought to be unfavorable to consumptives. But a comparison with the interior in regard to the proportion of deaths from this cause, will not sustain that view. Of the three thousand one hundred and twelve deaths in the city, five hundred and fifteen were reported from phthisis; of sixteen hundred and sixty-six deaths elsewhere, two hundred and sixty-four were from phthisis—making within a trifle of one-sixth in both cases, the balance being slightly against the city.

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A few consumptive patients are sent from the city to die in the interior, but a much larger number are sent in the opposite direction and end their lives in the hospitals of the city. In view of these facts and figures, it is fair to conclude that the climate of San Francisco is as favorable to consumptives, to say the least, as that of the interior towns.

The equable climate of the southern section of the State, its exemption from extremes of heat in summer and cold in winter, its dry and pleasant winters, would seem to sustain the claim set up for it as a home for consumptives. But the figures do not confirm this view. On the contrary, the number of deaths attributed to phthisis in Los Angeles, San Diego and San Luis Obispo is fifty out of one hundred and ninety-seven, or a trifle over one-fourth. Los Angeles makes the best showing, phthisis being charged with one death in five, while San Diego and San Luis Obispo have one in three. From Santa Barbara we have returns for only four months, and these returns show one of three deaths from consumption.

But we must not attach too much importance to these partial returns. To be conclusive, statistics must cover a longer period of time, and cases coming from abroad must be excluded. Again, the number of deaths by consumption should be compared with the entire population and not with the whole number of deaths from all causes; otherwise a small aggregate death-rate would give an undue prominence to the mortality of phthisis.

The mortuary tables reveal a fact which will surprise every one, namely: that acute inflammation of the pulmonary organs was much more fatal outside of the metropolis. Inflammation of the lungs is charged with one hundred and sixty-four deaths in San Francisco and one hundred and sixty-two in other localities. That is to say, the proportionate mortality from inflammation of the lungs, outside of the city, was more than double that of the city.

DISEASES OF THE STOMACH AND BOWELS.

Inflammation of the stomach and bowels is charged with one hundred deaths in San Francisco and one hundred and thirty-

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nine elsewhere. When it is considered that the latter figures refer to a total mortality from all causes only half as great as the former, the excess of mortality from this cause in the country as compared with the city, will appear more manifest.

Dysentery and diarrhea are credited with a small number of victims, either in town or country. There is no question that some of the deaths attributed to inflammation of the bowels, might be placed under this head. But these two diseases have not been prevalent for a number of years. In the days of the gold fever, when proper food and shelter were wanting, and when the habits of the immigrants were subject to no law, dysentery prevailed, in the acute form, with considerable fatality. But lately it is almost unknown. Indeed it may be said that California enjoys a remarkable exemption from acute dysentery. The few cases which find their way into the bills of mortality are of the chronic form.

SCARLATINA AND DIPHTHERIA.

From scarlatina, fifty-two deaths are reported in San Francisco and thirty-two elsewhere. All but six of those in the city occurred in the first five months of the statistical year ending with January. In the country this disease increased at the time of its diminution in the city.

Diphtheria had twenty-six victims in the city and twenty-nine in other localities. In the main, it advanced and receded *pari passu* with scarlatina. Not a single death from either cause was reported in the city in February, and none from diphtheria in or out of the city. Considering the uncertain and intractable character of these maladies in their aggravated forms, investing them beyond all other diseases with terrors to parents, and the ravages they have committed in various quarters of the world, the people of California have reason to felicitate themselves on their remarkable exemption during the past year.

TYPHOID AND TYPHUS FEVERS.

Typhoid fever had a fatality of one hundred and thirty-six in San Francisco and ninety-seven in the other localities. Two-

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thirds of the deaths took place in the half year from September to March inclusive, the force of the disease culminating in November and December. This affection appears to have two periods of development, the first cotemporaneous with autumnal frosts, the second with the sudden transition from the dry atmosphere of summer and autumn to the moist condition of the winter months, occurring about the first of November. A rapid subsidence of the disease takes place in February, at which date there is a great revolution in the hygrometric condition of the air, due, we may suppose, to increase of solar heat.

A number of deaths from typhus fever, so reported, are included in typhoid. Typhus is exceedingly rare in California, not more than two cases having fallen under my observation in twenty-one years. The distinction between the two is well marked, and is now generally acknowledged by pathologists, though not recognized by all practitioners.

Whatever it may be elsewhere, typhoid in California is not contagious. It occurs sporadically, without regard to town or country, sometimes running through a family, evidently from some local cause to which all the members have been subjected. It is not a fatal disease, the great majority of cases recovering. It calls for no active treatment, unless to meet local determination to the head, chest or abdomen. Oil of turpentine, muriatic acid and quinia, all in moderate quantities, are the best medicines. Alcoholic stimulants are seldom required, even by patients who have been habituated to them in health. The convalescence is proverbially slow and tedious, and the slightest error or excess in diet is perilous.

Within the sphere of my observation, typhoid patients have fared better in hospitals than in private practice. During five years in which I was visiting physician of the St. Mary's Hospital, cases were brought in continually, in the advanced stage, with but little prospect of recovery; but they mostly recovered nevertheless. Men whose habits had been intemperate appeared to fare no worse than others. The worst cases were those which exhibited the least pain or distress. So well marked was this feature, that I learned to shudder when a patient reported himself "first rate." One poor fellow invariably

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answered my inquiry from day to day with a cheerful "first rate, sir," whilst he was gradually succumbing, with an extraordinary exemption from pain or suffering. He sank into the sleep of death without delirium or hebetude, or any disturbance of the cerebral function.

REMOVAL OF TYPHOID PATIENTS RECOMMENDED.

I have sometimes attributed the improvement following the transfer of a patient with typhoid to the hospital, to a change of atmosphere, or the escape from the vitiated surroundings of the locality in which the disease was contracted. And this idea has led me to propose, in all cases of typhoid fever, that the patient be carried away from the place where he was taken sick. This is particularly desirable when the disease shows a tendency to run through a family, as it often does, denoting a toxic condition of the house or locality. We know how salutary is the removal of yellow fever patients from the infected district where the disease had its origin—how the probability of death is replaced by the almost certain prospect of recovery. I would urge that in every instance in which typhoid invades a family and exhibits a disposition to smite down one after another of the household, the inmates, sick and well, be at once transplanted to other houses.

The onset of typhoid is often extremely insidious. Patients come to one's office from day to day with vague, ill-defined symptoms, not calling them from their business, and yet not controlled by treatment, and persisting and increasing till they are compelled to take the bed. In some cases when the diagnosis was a matter of suspicion rather than of confidence, the characteristic lesions of the ilium, undistinguishable during life, were found after death strongly marked. One instance has lately occurred to me in which a slight fever with tendency to diarrhea, and mental hebetude, were the only morbid conditions for two weeks, at the end of which time rosaceous spots and gurgling on pressure presented themselves simultaneously with a general improvement which passed speedily into convalescence.

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RECURRING INTERMITTENT—VALUE OF QUINIA.

Malarious affections, which prevail in nearly all the valleys not swept by the daily sea breeze of summer, are generally of a mild and chronic character, but at the same time not always readily yielding to treatment. Intermittents are remarkably persistent and liable to recur; and they often follow up their victim in other climates and in all seasons of the year. An intermittent tendency, amenable to quinia, has been noticed in connection with almost every form of disease. In acute affections of the thoracic and abdominal organs, especially in children, and in the transient fevers of child-bed, one or two anti-periodic doses of quinia often expedite the cure in a wonderful degree. So wide is the range appropriate to the administration of this great anti-periodic, that some intelligent practitioners are wont to prescribe it empirically in almost every case of acute disease. I have certainly witnessed extraordinary benefit from its use in croup and in the bronchial fevers of children.

DISEASES FROM IRRIGATION AND FROM COLD SITTING-ROOMS.

Large tracts of land in the interior of the State, which are incapable of profitable cultivation by reason of drought, are about to be reclaimed by an extensive system of irrigation. What effect will this have on the health of the future inhabitants? Some years ago a canal was dug in Yolo county to convey water for irrigation; and I have been informed that the result was a marked development of malarious disease in a once healthy region. The same cause, together with the stirring up of the earth by tillage, is almost certain to produce the same effects in other localities. In the present condition of our hygienic knowledge, no certain preventive can be suggested. Some benefit may be derived from carefully guarding against the cool nights of autumn, and particularly by having fire in the sitting-room in the evening. The evenings may be not quite so cold as to require a fire, and yet too cool for perfect comfort, when persons are sitting inactively after the labors of the day. The feet at least become cold, and remain so for hours, if not most of the night. Can there be a doubt that these circumstances favor the production of malarious fevers?

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I have reason to believe that typhoid fevers are often produced by sitting from day to day in a cool atmosphere—not so cold as to be vividly uncomfortable, yet sufficiently so, by its prolonged influence, to depress the vital forces and diminish the power of resistance. Our winters are so mild that there is no absolute necessity for artificial heat, during a great portion of the time. I would propose, as a law of health, not only in malarious regions but everywhere, always to have a fire on the hearth in the evenings of autumn and winter, unless the atmosphere be exceptionally warm. It tempers the air of the apartment, dries it, and promotes ventilation.

In the ocean climate of California, there is a remarkable absence of warm nights. In San Francisco, for instance, the highest temperature at ten P. M. during the present year was seventy-two degrees, and only on nine nights during the year has the mercury been above sixty degrees at that hour; and this is a fair average of our seasons. An evening warm enough to admit of sitting out of doors with comfort and propriety, is a rare event. For comfort and health, the air of a sitting-room should not be under sixty-eight degrees.

EPIDEMIC OF VARICELLA MISTAKEN FOR SMALL-POX.

A few cases of small-pox have been reported to the Board of Health of San Francisco, from time to time, and two deaths from this cause during the year are on record. It is questionable whether most cases thus reported were not varicella in an aggravated form. Varicella has prevailed for several months, both in San Francisco and in some interior localities, presenting in numerous instances features not distinguishable from those of modified small-pox. One of the cases of reported small-pox above referred to, occurring in a neighborhood where I was cognizant of the prevalence of varicella, I was induced to inspect it; and I am satisfied that it was nothing more than varicella. In another instance four cases of small-pox were reported in one house. On examination I found five cases of eruptive disease, four of which were decidedly chicken-pox. The fifth, had it stood alone, would have been pronounced

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varioloid, but under the circumstances I could not avoid classing it with the others.

A marked feature of a large proportion of the cases of varicella, is the appearance of the eruption in successive crops, occupying sometimes a week from the beginning to the end of the eruptive stage.

That a few cases of genuine variola have made their appearance from time to time in San Francisco and elsewhere in California, without diffusing the disease, only demonstrates the absence of that peculiar epidemic diathesis, which, if present, would have kindled from a single spark a destructive conflagration. In the absence of that diathesis, it would appear almost as difficult to propagate small-pox, as to extinguish it during its presence.

MOVEMENT OF PANDEMIC WAVES.

Storms and climatic changes move over the earth's surface in great waves. At the Smithsonian Institute in Washington, Professor Henry, standing at a telegraphic centre and receiving from points of observation far and near the requisite data, notes on a map of the continent, the conditions and changes as they occur at different localities. He soon observes a storm-wave setting in from the Gulf of Mexico and moving northward; and catching its direction and velocity, he is able to mark out its course in advance, and to give warning of its approach at various points.

In like manner do waves fraught with the elements of disease and death move over the earth's surface. But they move much more slowly. Observations carefully made and collated may enable us to see their approach and foretell their advent. Their general tendency is from east to west. Thus small-pox, in its first great irruption as varioloid, crossed the ocean from Europe in 1826 and swept over the Atlantic States. In 1831, influenza pursued the same course, and malignant cholera followed in 1832.

Several times since that date cholera has crossed the sea and travelled into the interior, but without any uniform line of march. Small-pox, as an epidemic, moves with a course still

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more irregular. It prevailed in California in 1861 and 1862, and again in 1868 and 1869; but in neither instance did it appear to come by regular approach. Three years ago it became epidemic in some parts of Europe. During the Franco-German war it invaded Paris, and added greatly to the horror of the siege. It then crossed the channel, visiting London and other parts of Britain. Pursuing its former route, it soon arrived in America, vexing the Atlantic cities and threatening the whole interior.

GREAT MALIGNITY OF SMALL-POX—VALUE OF VACCINATION.

It appears to be generally conceded that small-pox, both in this country and in Europe, in the last four or five years, has displayed a greater malignity than ever before since the days of Jenner. It has overleaped the ordinary barriers to a greater extent, destroyed a larger proportion of individuals who were considered as protected, and proved more fatal to the unprotected.

Small-pox seldom takes on its epidemic intensity within periods shorter than from five to seven years. Having prevailed in California with so much malignity at so recent a date, we may reasonably hope for exemption for several years to come. Meantime vaccination should not be neglected. There is abundant evidence to prove that general and thorough vaccination is capable of almost stamping out the pest. It is conceded that the protective influence of vaccination, and of variolation as well, is weakened in many instances by time; hence the plain rule to repeat it universally whenever a variolous outbreak occurs.

VACCINE ENDEMIC AMONG CATTLE.

In the winter of 1870–'71, an endemic of kine-pock appeared among the cattle on the Point Reyes Ranch in Marin county. For a long time its nature was not suspected; but, coming to the knowledge of some professional men in San Francisco, it was made a subject of investigation by them, and its true character fully demonstrated. The virus procured from the diseased cows was introduced in the human system and developed the

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true vaccinia. To Drs. R. McMillan and J. B. Trask, of San Francisco, is due the credit of the discovery and the experiments.

THREATENED VISITATION OF CHOLERA.

Another cloud appears in the eastern horizon in the form of epidemic cholera. This strangest of modern plagues, which, forty years ago, for the first time in its history, travelled away from its home on the Ganges, and extended its desolating march to the old and the new world, has since then repeatedly started on the same track and wandered over the earth. Several times since the settlement of California it has visited this coast, but only once as an epidemic—in 1850. How it was introduced on that occasion, is a matter of conjecture—if indeed it was introduced at all, properly speaking. Writers who hold to its propagation from man to man and in no other way, find no difficulty in tracing its line of march along the channels of travel, even though they may be compelled to draw upon the imagination, in the absence of positive data.

REPUTED CONTAGIOUSNESS OF CHOLERA.

The doctrine of contagion, both as to cholera and other diseases, has gained ground rapidly in the last twenty years. In the first visitation of cholera in America, our physicians who became familiar with it, discarded the idea of its communicability from person to person, with much unanimity. Since that period, the theory of disease-germs has gradually taken possession of the professional mind, and drawn it into a belief hostile to the convictions of former experience. So wonderfully has the microscope peopled with rudimental organisms the skin, the blood and the excretions, that men are carried away with enthusiasm, and led to behold in various forms of disease nothing more than the development of vegetable or animal life in the fluids or solids of the body. Or else certain chemical elements floating in the air find their way into the blood and set up a fermentation by which they are propagated, and the corresponding malady disseminated. A *material* cause is wanted—for it is the age of materialism in medicine. Dynamic forces are ignored in the etiology of the present day.

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HISTORY OF CHOLERA IN 1850.

In the summer of 1850, malignant cholera pursued its course westward from the Valley of the Mississippi towards the Pacific coast. At the same time it prevailed at Havana and at Acapulco, without extending to any other of the intermediate points in the line of travel, then crowded, from New York to San Francisco. The writer left New York on the steamer Ohio, on the last day of May, and arrived at the port of Havana in ten days, where the passengers were transferred to the Falcon, just arrived from New Orleans. They remained in the harbor, about half a mile from the town, twenty-four hours, and were prohibited from landing on account of the prevalence of cholera. The officers, however, had free communication with the shore, and many passengers also were carried to and fro in the boats of the natives. The ship was surrounded at all times of the day with boats, laden with fruit and other commodities which were freely purchased by the passengers. It was in the midst of the rush for California, and the Falcon was crowded with at least double the number of persons prescribed by law. Besides, the vessel was filthy beyond description. A more inviting field for the invasion of cholera could not be imagined. But not a solitary case appeared. The five hundred voyagers were safely landed at Chagres, whence they floundered across the Isthmus, as best they could, to Panama, there to wait from one to three months, for the arrival of the vessels for which they were ticketed to San Francisco. Not less than two thousand persons were thus detained in Panama, under the same circumstances, all of whom had touched at Havana and communicated with the diseased city. But no cholera appeared among them, though there was much sickness in the form of diarrhea, dysentery and fever, mostly induced by the grossest abuse of the laws of health.

About this time the cholera made a descent on Acapulco, a seaport town of two or three thousand inhabitants, fifteen hundred miles north of Panama, on the route to San Francisco. The disease did not exist at any port on the Pacific or elsewhere in communication with Acapulco, and there was no line

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of travel overland by which it was possible to trace its introduction to that place.

After an imprisonment of six weeks in Panama, the passengers of the Falcon embarked on the Republic, a still smaller vessel, and consequently still more crowded. Every night the decks were covered with the steerage passengers, who deemed it a luxury to escape the stifling air of the hold and sleep beneath the open sky. Under these circumstances the ship arrived at Acapulco, and remained forty-eight hours to procure provisions and coal. The passengers, almost without exception, spent the time on shore during the day, and many of them at night also. Cholera was raging severely. On the doors and walls of the houses were posted paper crosses, printed with an invocation to the Virgin for deliverance from the plague. I visited the Alcalde, and found him in his hammock, in the act of firing a train of gunpowder laid on the plastered floor so as to surround him. As the cloud of smoke rose and obscured him for a moment, he appeared to enjoy the process as though he knew all the secrets of invisible organisms and sulphurous acid. Whilst I was with him, a messenger reported two cases for relief, which I visited at his suggestion. I found a father and his son, both in the advanced stage of unmistakable malignant cholera. Six or eight deaths a day were said to occur in that small population.

If ever a crowd of human beings ought to have suffered a sweeping invasion of cholera, here was the occasion. After inhaling the infected atmosphere and drinking the water fraught with the poison-germs of Pettenkoffer, several hundred individuals were again crammed into the little steamer like sheep in a pen. Not a case of cholera appeared among them, nor indeed anything approaching it. The passengers landed at San Francisco on the twenty-third of August. The cholera did not appear in the city until sometime in October.

The account given of the voyage of the Republic will apply, almost word for word, to several other vessels engaged in the same trade at the same time. All touched at Acapulco and remained at least long enough to coal, the passengers having

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free access to the shore. The idea of contagion was not entertained in those days.

FIRST APPEARANCE OF CHOLERA IN CALIFORNIA.

Meanwhile the climatic diathesis, on which the disease in question appears to depend, extended rapidly across the continent in the channels of emigration, and some of the towns and mining camps of the interior were visited with cholera in the month of October, none so unsparingly as the City of Sacramento. San Francisco, in daily and hourly intercourse with all parts of the State, was about the last point of attack. A few sporadic cases occurred here several weeks after the cessation of the sea breeze of summer. But it was not till December that it became epidemic, the weather at the time being cool, with occasional frosty mornings. It disappeared about the end of the year, after a mortality not exceeding two hundred.

At several times during subsequent years, the Panama steamers brought to San Francisco patients with cholera, who were landed without restraint. In the summer of 1854, six or seven cases, in the advanced stage of collapse, were transferred from a vessel just arrived, to the City Hospital then under the charge of my brother Dr. W. P. Gibbons, conjointly with myself. They were waited on by the Sisters of Mercy and by the nurses of the hospital, and with the exception of placing them in a ward by themselves, no precautions were employed against contagion. In none of these instances did the disease extend; not one among the nurses and attendants ever contracted it. In fact, the whole history of cholera in California is directly hostile to the idea of its communicability from one person to another.

CHOLERA NOT TO BE QUARANTINED.

Without denying that, under some circumstances, this disease has proved itself contagious, it may be alleged that, on the one hand, it will not spread when imported into a locality where the climatic constitution favorable to its development is wanting; and on the other hand, that quarantine laws are powerless to exclude it from cities to which the choleraic diathesis

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has extended. This question is of some consequence to California, in view of the probable approach of cholera to the Pacific coast at no very distant day. Instead of quarantine regulations which embarrass commerce and detain passengers on crowded ships, it were better to remove all local causes of disease, and enforce on the population all possible sanitary and hygienic measures.

DOCTRINE OF SPECIFIC POISON AND ELIMINATION.

The doctrine which attributes cholera to a specific poison, for the expulsion of which nature institutes a flow from the bowels, has led to the *eliminative* treatment. Cathartics or aperients are administered to purge away the peccant material. This method is directly hostile to the universal experience of the profession thirty years ago. Practitioners who encountered the disease in its earliest visitations to America, as well as those who had to do with it in the eastern hemisphere, will be slow to admit the benefit of purging, or the danger of arresting the premonitory diarrhea. Too often have they seen a simple dose of castor oil, taken in the preliminary stage, bring on the profuse evacuations characteristic of the malady and usher in a hopeless collapse; while on the other hand they have witnessed, with great uniformity, the entire success of opiates and astringents in checking the intestinal discharge and preventing the further development of disease. These remarks will hold good at least in relation to the ordinary form of the epidemic, free from malarious complications.

PREVALENCE OF INSANITY IN CALIFORNIA—CAUSES.

The prevalence of insanity in California is a subject of frequent notice. In the State Asylum, at Stockton, there are upwards of one thousand patients—a number terribly out of proportion to the means of accommodation, to say nothing of treatment. Every day adds to the number, which increases in a much greater ratio than the general population. It is remarkable how large a proportion of the victims come from the mus-

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cular stratum of society—men and women of coarse nerves, uncultivated and unrefined.

Without dwelling on this painful theme, I will enumerate the principal causes which appear to operate so forcibly among us in dethroning the reason.

First—The general character of a people who have left their homes to colonize a distant country. Such persons are not an average of the race. Discontented, restless, enterprising and ambitious, they combine the elements of character prone to mental aberration.

Second—Absence from home and the want of domestic and family ties, to give repose and relief to body and soul.

Third—Neglect of accustomed religious observances, and failure to cultivate as of old the religious sentiment which would serve as ballast in the storms of life.

Fourth—The want of fixedness—the idea that this is but a temporary home, creating the sensation of being adrift in the world.

Fifth—Nostalgia—longing for the old home, the father land, the scenes of childhood and the objects of early attachment.

Sixth—The eager pursuit of wealth as the chief end of life, and the entire absence of contentment, whether fortune smiles or frowns. Men are miserable unless they are making and hoarding money.

Seventh—Reverses of fortune; alas, how frequent!

Eighth—Absence of the moral restraints to which persons have been amenable in the old and staid communities where they have resided.

Ninth—Constant excitement, keeping up unbending nervous tension.

Tenth—Unbridled indulgence of animal passions.

Eleventh—Self-abuse, incident to excess of male population.

Twelfth—Imaginary diseases, fostered by the advertisements of villainous quacks in the newspapers.

Thirteenth—Practical ignorance of the value of cold water as a beverage.

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PREVALENCE OF PHTHISIS IN THE FOREIGN POPULATION.

The excessive mortality among our foreign-born population is worthy of notice. Of all nationalities, the natives of Ireland fare the worst. Pulmonary consumption is more conspicuously prevalent among them. Accustomed in their old home to a diet restricted in quality if not in quantity, one might suppose that transplantation to a land flowing with milk and honey, and the substitution of animal for vegetable food, would fortify them against the invasion of tubercular disease. But the reverse appears to be true—and this in spite of the free use of that great prophylactic—whisky!

In no country of the world is the laboring population as well housed, and as well clothed, and as well fed as on the Pacific coast. Nowhere do they so generally own houses and lands, and enjoy the comforts, and even the luxuries of life. The complaint lately made in England by some eminent writers, that the laboring population of Great Britain is underfed, especially the women, certainly has no foundation here. Want of nutrition, whatever agency it may exert elsewhere in the development of tuberculosis, can not be assigned as a cause of the undue prevalence of phthisis in the Irish population of California. What then is the cause?

RELATION OF PHTHISIS TO MODES OF LIFE.

Transplantation of the human animal from barbarism to civilization, or from simple and rugged habits to a life of comfort and indulgence, appears to enervate the vital force and to favor the development of tubercular and other dyscrasies. The Indians of this coast when taken from their out-door life and placed in houses, under the domestic influence of the superior race, exhibit a proneness to pulmonary disease, and a feeble power of resistance to disease in general. Perhaps the transition from the simple fare and the exposed and toilsome habits of Ireland to the comparative ease and indulgence of their adopted home, has a similar effect on our Irish population. Certain it is that the refinement and luxuries of a high civilization, whilst they protect many individuals, enfeeble the general constitution and

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deteriorate the stock. Equally certain is it that a change from the ease and luxury of a city life to a certain degree of exposure and toil and hardship in the country, tends to counteract the development of phthisis. Suppose that all children of consumptive parents in such a city as San Francisco, or Boston, and all other persons of tubercular tendencies, could be seized by an iron hand at the period of adolescence and dragged into the forest and the mountain, and made to "camp out" and sleep in blankets on the ground, and endure hardships and coarse fare, what, let me ask the reader, would be the result in diminishing the mortality among them from phthisis?

ACCIDENTS OF CHILD-BED AMONG FOREIGN WOMEN.

Accidents of child-bed are also more frequent among foreign-born women. Such, at least, is the result of my observations during twenty-one years of practice in California. An undue proportion of labors requiring instrumental interference, owing to deformed pelvis and other causes, has been in this class of patients. Deformity of the pelvis I think is most common in European, and particularly German, women.

MORTALITY AMONG CHILDREN.

The mortality is also in excess among the children of foreigners. This is due in great part to sheer carelessness. A majority of American wives study arithmetic in the marriage-bed. Too many of them stand as murderers at the door of their own womb. But foreign women seldom exercise restraint. They multiply and replenish the earth with great industry. But they care less for their offspring after they are born, and suffer many to die from ill management and neglect.

Public attention is frequently called to the great mortality among children, not less than thirty-six or thirty-seven per cent. of the deaths in San Francisco occurring under five years of age. Persons are startled when they learn that so nearly half the children born in the metropolis die so young, and they seek some special cause for the fatality. But it is so in all large cities. In St. Louis, in 1869, a year of unusual health, when the death rate was under nineteen in a thousand, nearly one

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half the deaths were of children under five years. It should not be overlooked that a season of superior health may swell the infant mortality beyond the due proportion. A comparison of the deaths in children with the entire population, is the only basis for a correct estimate. Judged by this standard, there is nothing remarkable in the infant mortality of our chief city. But the absence among us of infantile diarrhea or cholera infantum, and other affections of the bowels, so terribly fatal in summer to young children in the Atlantic cities, ought to reduce the number of deaths of children in California.

ABSENCE OF SUN-STROKE IN CALIFORNIA.

There are two marked differences between the Atlantic cities and those of the Pacific coast, in regard to prevalent diseases and vital statistics as represented in the bills of mortality. One is the comparative immunity which we enjoy from the summer diseases of children, as just referred to, and the other, the absence of sun stroke. Notwithstanding the intense heat of the interior during the summer months, the thermometer often ranging from ninety to one hundred degrees in the middle of the day for several weeks consecutively, sun-stroke is almost unheard of in California. In both instances the reason will be found in the dryness of the atmosphere, promoting rapid evaporation from the skin, and uniform coolness of the nights, which favors sleep and recuperation. It is the universal testimony that a temperature of one hundred degrees on this coast is more easily sustained than one of eighty-five degrees on the Atlantic side. In the extreme southeastern corner of the State and in the adjacent portion of Arizona, the thermometer is said to rise sometimes as high as one hundred and fifteen or one hundred and twenty degrees. But even this extreme is not incompatible with general health. A physician in feeble health who was stationed at Fort Yuma some years ago, informed me that, during the excessive heat, he was in the habit of sitting every day in the shade of a tree, enveloped in a wet sheet, the evaporation keeping him comfortably cool. The cooling effect of this expedient may be inferred from the fact which I have repeatedly witnessed, that the thermometer will fall from ninety-

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five degrees in the open air to seventy or seventy-five degrees when the bulb is covered with a wet rag. In the hot, dessicated atmosphere of the interior, the human body bathed in sweat, becomes a wet-bulb thermometer, and cools itself by evaporation.

SUPERIOR DIETARY OF OUR POPULATION.

There are few countries in the world, if indeed there be any, capable of furnishing as wholesome a diet as the Pacific slope of North America. This remark holds good as to meats, bread, vegetables and fruit. In the ocean climate, which knows no summer, tainted meat is unknown; and when the sun is in the zenith, your butcher commends his beef because it has been killed several days. In the interior, the dryness of the air renders it antiseptic. By the abundant supply of food and the shortness of winter, if winter it can be called, animals are kept in good condition before slaughter. We seldom hear of epidemic diseases in the farm-yard.

The trichina has been detected in a number of instances in pork. But I am not informed of the occurrence of trichinosis in the human subject in a single case.

THE SUPPLY OF MILK—ITS CHARACTER.

In Atlantic cities, the great mortality among infants is attributed in part to impure milk. The milk supplied in California is generally pure and good. It is so, at least, as far as the cow is concerned; but when transported a great distance to market, to San Francisco, for instance, from the country around the bay, it is spoiled, or nearly so, before reaching the consumer, especially when churned in the streets for some hours during distribution. Adulteration is seldom practiced, though dilution with water is not always regarded as a violation of the moral law. Distilleries are not sufficiently numerous to affect the milk supply to any great extent. But it should never be forgotten, that wherever there are distilleries, there will be poisoned milk. The lives of infants so often depend on the wholsomeness of this staple of their diet, that thoughtful and conscientious persons who have them in charge, will never fail to

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assure themselves that the milk is exempt from this source of contamination.

Dealers in milk are not always destitute of chemical knowledge, which they bring to bear by dissolving a portion of soda in the liquid, in anticipation of the acetous fermentation, or after that has taken place.

EXCELLENCE OF VEGETABLES AND FRUITS.

Vegetables of all kinds are fresh and perfect almost in every month of the year. Fruits, also, in every variety, are always on hand and in great perfection. The entire absence of the fruit curculio precludes the presence of worms in any kind of fruit. I have never seen an instance of cholera morbus produced by eating cherries. Visitors from the East are surprised at the impunity with which they may indulge in this delicious fruit. The children of persons owning orchards are permitted to run at large among the cherry trees without apprehension of danger.

SUPERIOR QUALITY OF FLOUR AND BREAD.

There is less of unsound and damaged flour in California than in any other country. Wheat is used almost exclusively, and the mills vie with each other in turning out the finest qualities of flour. Besides, none but the best kinds will command the market. Bakers, in cities and towns, make a sweet and excellent bread. In this respect, the dietary of persons who depend on bakeries, constituting the great mass of the population, cannot be surpassed. In many rural districts, soda and saleratus are used extensively and lavishly in the maufacture of bread, with the effect of neutralizing the gastric acid and promoting indigestion.

WOODEN DWELLINGS—BASEMENTS—NO CROWDING.

Nine-tenths of the people of California live in wooden houses. In our dry and temperate climate, such habitations are not only comfortable but also conducive to health. Many of the better class of dwellings have basements with floors beneath the level of the ground. Such basements should be regarded

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as unfriendly to health, and especially should they be closed against individuals and families predisposed to pulmonary disorders. The crowded, underground life which abounds in large cities elsewhere, is unknown in California. There is no crowding anywhere, except among the Chinese, with whom it is the normal condition.

PREVALENCE OF UTERINE DISORDERS.

Uterine affections have been supposed to prevail in an undue proportion on the Pacific coast. In the last twenty or thirty years, gynecology has been signalized as a special department of study and practice, and physicians everywhere have been compelled to keep an eye on the uterus. Women, also, have caught up the idea, and learned to suspect that organ of countless sins. When certain forms of disease become objects of special observation and inquiry, they appear to multiply, because more extensively detected. Thus diseases of the heart, kidneys and uterus have greatly increased on the record.

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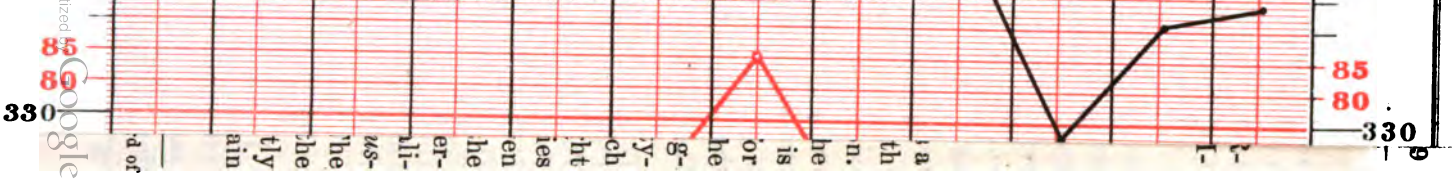
A PROFILE VIEW

OF THE MONTHLY & ANNUAL MORTALITY DERIVED FROM THE RETURNS OF 24 CITIES & TOWNS IN CALIFORNIA,

comprising nearly half the population of the State; also of the monthly curves of mean Temperature & Humidity for the corresponding period at Sacramento.



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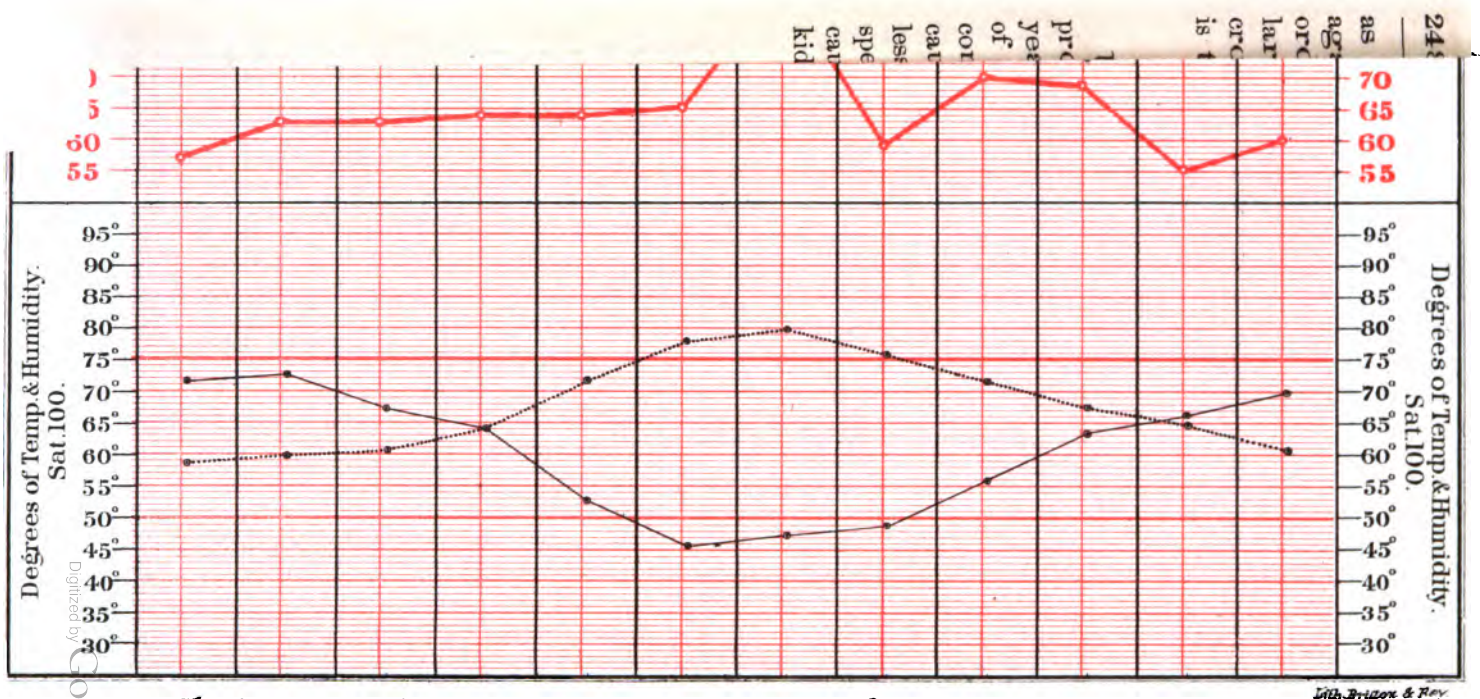

The heavy black line across the upper section of the Diagram marks the total mortality.

The red figures and line . . . . . the mortality by consumption.

The fine black line . lower . . . the monthly curves of mean Temp.

The dotted line the Humidity

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MONTHLY AND ANNUAL MORTALITY OF CALIFORNIA, AND THE CORRESPONDING MEAN TEMPERATURE AND HUMIDITY AT SACRAMENTO.

By THOMAS M. LOGAN, M. D., of Sacramento,

Permanent Secretary of the State Board of Health.

The annexed diagram has been appended to this volume, as a voluntary contribution on the part of its author, by and with the advice and suggestions of the Committee on Publication. Many important facts, relating to the medical history of the years 1870–71, are thereby revealed at a glance, which, it is hoped, will thus become readily available to the profession for future comparative references. The heavy black line across the upper part of the diagram, indicates, by the corresponding figures to the right and left, the total monthly mortality of twenty-four cities and towns, and of course the annual mortality, which is the sum of the monthly, or a total of four thousand eight hundred and thirty-one deaths. The population of these cities and towns amounts to two hundred and fifty-six thousand seven hundred and eighty-three, or nearly half the population of the State; and the ratio of deaths derived from these data, averages 13.9 per one thousand of each of the twenty-four localities; *while the ratio of the total number of deaths per one thousand is* 18.8; *or*,* one death to every fifty-three persons. The red line and red figures show how consumption pursues the even tenor of its course throughout the year, dipping gently towards the more genial spring and early summer, to rise again in the autumn and reach its acmè in January.

*This statement was imperfectly expressed in the "Report of the State Board of Health," owing to the omission of the words here italicized.

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The correlation of consumption with the total mortality, and their connection with humidity and coldness, is clearly seen in the coincident curves representing these facts and conditions. December and January are our coldest and most humid months, particularly the latter, as shown in the curves of temperature and humidity for Sacramento, in the lower section of the diagram; and, accordingly, we find the curve of total mortality, which was arrested in its upward course by the effect of winter upon malarial diseases, again forced upwards, chiefly by the increased number of deaths from consumption. In February, which is comparatively a dry winter month, we see the climatic influence both in the curve of mortality and of consumption. The steady descent of the former curve, somewhat deflected in its course by the cold winds of March, until the middle of April (which latter, our records of the last twenty years establish as the healthiest month), is shown to be too great to be influenced by the slightly increased mortality from consumption, attributable to the chilling winds of the early spring.

It will be seen that the greatest number of deaths occurred in November..... 482
The next greatest number in October..... 473
The next greatest number in January..... 463
The next greatest number in July..... 432
The next greatest number in December..... 419
The next greatest number in August..... 405
The next greatest number in September..... 400
The next greatest number in February..... 373
The next greatest number in March..... 361
The next greatest number in June..... 349
The next greatest number in May..... 346
The least number was in April..... 328

Total for the twelve months..... 4,831

Of the causes of these deaths, seven hundred and seventy-four were by consumption; the greatest mortality by this disease being eighty-five, in January, and the least, fifty-five, in May. From other diseases of the lungs, three hundred and eighty died; the greatest mortality, fifty-one, being in Febru-

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ary and December; and the least, nineteen, in June and September.

From diseases of the stomach and bowels, the greatest number, thirty-eight, died in August; and the least, eight, in April.

The greatest number of deaths by diptheria was nine, in November; and the least, none, in February.

Scarlatina proved most fatal, fifteen deaths, in October and November; and least fatal, three deaths, in August.

Typho-malarial fevers proved most fatal, forty-three deaths, in November; and least fatal, seven deaths, in April.

From all the most prevalent diseases, the greatest number, one hundred and ninety-six, died in January; and the least number, one hundred and fourteen, in April.

Of the balance of deaths, amounting to three thousand and twenty-four, by all the other diseases and accidents to which humanity is liable, and which are almost unavoidable, comment is not necessary.

As a matter of interest and of some value, from a comparative point of view, the following table, based upon data furnished in Motard's "Traitè d'Hygiene Generale," and compiled from the "Handbuch der Medicinischen Statistik," of Osterlen, and "Allegemeine Bevolkorungs Statistik" of Wappæus, is here inserted:

RELATIVE MORTALITY.

Countries.	In Cities, 1 in	In Rural Districts, 1 in
France, 1858.....	35.10	44.30
England, 1850–1859....	37.44	54.34
Holland, 1850–1854....	35.55	43.03
Belgium, 1851–1855....	34.35	44.31
Sweeden, 1851–1855....	28.95	46.86
Denmark, 1850–1854...	37.41	49.77
Prussia, 1849.....	27.97	34.46
California, 1870–1871...	49.45	130.77

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STANDING COMMITTEES.

The following named committees are expected to report at the annual meeting, on the second Wednesday in October, at Oakland:

ON PRACTICAL MEDICINE, MEDICAL LITERATURE AND HYGIENE.

J. F. Morse, M. D., of San Francisco, Chairman;
I. E. Oatman, M. D., of Sacramento;
M. H. Biggs, M. D., of Santa Barbara;
R. T. Hayes, M. D., of Los Angeles;
W. Fitch Cheney, M. D., of Chico.

ON SURGERY.

A. B. Nixon, M. D., of Sacramento, Chairman;
L. C. Lane, M. D., of San Francisco;
J. J. Franklin, M. D., of Sonora;
James Simpson, M. D., of Grass Valley;
A. G. Soule, M. D., of San Francisco.

ON OBSTETRICS.

G. L. Simmons, M. D., of Sacramento, Chairman;
John Scott, M. D., of San Francisco;
F. W. Todd, M. D., of Stockton;
A. S. Ferris, M. D., of San Francisco;
H. W. Harkness, M. D., of Sacramento.

ON MEDICAL TOPOGRAPHY, METEOROLOGY, ENDEMICS AND EPIDEMICS.

F. W. Hatch, M. D., of Sacramento, Chairman;
D. B. Hoffman, M. D., of San Diego;
S. B. Brinkerhoff, M. D., of Santa Barbara;
T. T. Cabanis, M. D., of Yreka;
M. B. Pond, M. D., of Napa.

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ON INDIGENOUS BOTANY AND THE DOMESTIC ADULTERATION OF DRUGS.

W. T. Bradbury, M. D., of San Francisco, Chairman;
W. P. Gibbons, M. D., of Alameda;
Ezra S. Carr, M. D., of Oakland;
O. Harvey, M. D., of Galt Station, Sacramento county;
R. H. Plummer, M. D., of Dixon.

ON MEDICAL EDUCATION.

J. P. Whitney, M. D., of San Francisco, Chairman;
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Henry Gibbons, Jr., M. D., of San Francisco;
J. H. Wythe, M. D., of Santa Clara;
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ON PRIZE ESSAYS.

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ON PUBLICATION.

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